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THE FUNCTION AND PROPER FIELD OF ACTIVITY OF THE PUBLIC HEALTH OFFICER

AS COMPARED WITH THE PRIVATE PRACTITIONER

LEVERETT D. BRISTOL, M.D., DR.P.H.
District Health Officer of Cattaraugus County (N. Y.); Director, Cattaraugus County Health and Tuberculosis Demonstration
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In promoting the betterment of public health, the private practitioner and the public health official must cooperate to bring about the desired results. While special functions and fields of activities of health officers and private practitioners may differ, their objects and aims are the same—to promote positive health for all members of society and to relieve the more unfortunate persons of disease and suffering.

At the outset, it may be stated that there is one general function and one field of activity in which both health officers and private practitioners must join, and that is the function and field of active (not passive) cooperation. As in all other forms of human activity, cooperation between medical practitioners and health officials means operation together for a common object, or joint action, aid and help. It has been said that cooperation has a moral basis. If a health officer always thinks in terms of his rights and powers, and gives little consideration to his obligations and duties it is certain that he will be a misfit, unable to work with any one, be he physician or layman. If a private practitioner thinks only of his individual rights and forgets his obligations, he, too, will be a failure so far as cooperation is concerned. The ideal toward which we must work in bringing about active cooperation between private practitioners and health officers is that moral aspect which makes it possible for health officers to think chiefly of their obligations, duties and responsibilities, and to consider carefully the rights of others; and which results in a more definite consideration on the part of private practitioners of their own obligations and of the rights of others.

FUNCTIONS AND PROPER FIELDS OF ACTIVITY OF THE HEALTH OFFICER

1. *The Local Health Officer.*—The local board of health is the oldest and the most responsible public health unit. As its chosen executive officer, the local health officer should be the public health leader and educator of his community. However, he must always remember that, except in those few instances in which state laws permit a local community to do away with its local board of health and give almost autocratic power to the local health officer, the local board of health has directive power and the right to make regulations, and decide policies of administration. The local health officer acts as the agent of the board and takes such action as may be delegated to him when the board is not in session.

The powers and duties and the fields of activities of local health officers may differ somewhat in the various states, depending on the laws of such states. In general, as required in New York State, it may be stated that these are to:

1. Make an annual sanitary survey and maintain a continuous sanitary supervision over the territory within their jurisdiction.
2. Promote the spread of information as to the causes, nature and prevention of prevalent diseases, and the preservation and improvement of health.
3. Take such steps as may be necessary to secure prompt and full reports by physicians of communicable diseases, and prompt and full registration of births and deaths.
4. Enforce within their jurisdiction the provisions of the public health laws and the sanitary code.

In addition to these general duties, in certain states the local health officer also is charged with the function not only of making sanitary inspections of school buildings but of being responsible for the medical examination of school children. In New York State, the latter work is carried on under the supervision of the educational authorities through specially appointed school physicians.

In all of such work we would emphasize particularly that the public health officer should be chiefly a public health teacher and not merely a sanitary policeman.

2. *The County Health Officer.*—In those states having laws permitting the employment of county health officers or general district health officers for counties, such health officers possess all the powers and duties conferred on local health officers within their particular jurisdictions. Under such a law, the local health officers within a general health district, or county, act as deputies to the general district (or county) health officer.

3. *The State Health Officer.*—There are two forms of state health organizations, one in which the power and authority is vested in a state board of health, consisting of several part-time officials, which employs a secretary or executive officer usually on a full-time basis. Most of the states continue to maintain such an organization. Some of the more progressive states, such as New York, Massachusetts and Maine, have reorganized state health work in such a way that the chief power is vested in a commissioner who has the assistance of an advisory council.

In New York State, provision has been made for the employment of sanitary supervisors, whose chief

functions are to supervise the work of local health officers in their respective districts and to act as the agent of the state health commissioner.

The outstanding need in our entire future health program is that which has to do with rural public health and sanitation, and its adequate development throughout the state.

In general, it may be said that while there has been a gradual decline in the death rate in the cities, the death rate in country communities has remained fairly stationary. Furthermore, statistics seem to indicate that, of the men examined for military service, those from several states having a large urban population have shown a smaller percentage of rejections on account of physical defects than those from many rural sections. The reasons for this state of affairs are not entirely clear, but it would seem that one of the chief factors is the difference of public health organization and administration in the city from that of the country. The cities, especially those of large population, long ago realized the necessity for a businesslike organization to prevent disease and to conserve health; the employment of a full-time health authority with necessary assistants to formulate and administer laws and regulations for the protection of the community at large has been the result. City health work has become communal in nature; country health work has remained more or less individualistic.

Through the installation of an adequate sewage system, properly controlled, a city has been able to eradicate most of the diseases spread by discharges from the intestinal and urinary tracts; by the protection of its water supply, or by the filtration and chemical purification of a polluted supply, thousands or millions of inhabitants have been protected against water-borne diseases; by modern dairy and milk inspection, diseases spread through milk have largely disappeared; by suitable laws, properly enforced, specific prophylactic measures have been carried out, and various communicable diseases controlled by isolation and disinfection; by provision for the education of the public, school children and adults have been taught personal hygiene.

On the other hand, the individual, or at most, the family, has remained the unit in health matters in rural districts. The old well is usually looked upon as a suitable source of water supply for the farmer whose father, grandfather and great-grandfather may have used it, in spite of its pollution with intestinal bacteria; the open privy has been tolerated because of a lack of information regarding its dangers and for want of a proper substitute; the farmer himself has acted as his own dairy and milk inspector, with disastrous results in many instances; the country school child has remained in ignorance of many laws regarding personal hygiene and the value of specific prophylactic measures; the farm home has remained one of the poorest ventilated places in the world because of lack of adequate heating plants to insure comfort against cold, fresh air in the winter.

How may we do away with these adverse conditions existing in rural districts? By bringing together all of these individual or family units and placing them under the control of a community health authority.

It must be admitted that the states already mentioned have done a large amount of good work in building up their health organizations in rural districts; but in the majority of states much remains to be done. In certain Southern and Western states, in which the county is the chief political unit, the county health organization has been the agency to cooperate with state boards or departments of health in the development of rural hygiene and sanitation. In the Northern and Eastern states, the town or so-called local board of health has been the organization to carry on rural health work, in conjunction with the state department. Because of the great gap previously existing between the state department of health and the town board of health, Massachusetts, New York and Maine, and one or two other states, have wisely provided for the dividing of their respective states into health districts in charge of full-time district health officers, under the supervision of the state department of health. Probably the chief function or duty of a district health officer or sanitary supervisor is to act as a connecting link between the state department and the local town board of health or health officer; and as such his work as an adviser in matters pertaining to rural hygiene cannot be overestimated.

The whole question of rural health work resolves itself into one of demand and supply. When the rural community itself demands an efficient local health organization, and is willing to pay for it, then the supply will be forthcoming. The cities have well organized health boards because the population in the cities has demanded it; but even such a demand in large cities has been based absolutely on the education of the people regarding the value of such work. Legislation not backed up by popular opinion is difficult to initiate and even more difficult to enforce. The federal government, or the state, cannot successfully force even an efficient local health organization on any rural district or small town. The demand or invitation must come from within the small unit. Therefore, the whole problem of public health administration in rural districts comes down to a question of public health education in rural districts, and the greatest function of a state department of health should be one of education.

The New York State Department of Health, under the guidance of the late state health commissioner, Dr. Hermann M. Biggs, has done most excellent work in carrying on such a campaign of education, to the end that permissive legislation has been passed making it possible for an entire county to constitute itself as a general health district, and to appoint a board of health which has the power to appoint a full-time trained health officer for such a county unit. Cattaraugus County is the first county in New York State to constitute itself a general health district and to employ a district health officer for the county.

In addition to carrying on such educational work, state health authorities may have other important functions and fields of activity, such as: (1) investigation and research of various kinds; (2) epidemiologic and laboratory diagnostic service; (3) standardization of methods and forms; (4) fixing of professional standards for the qualifications of health officers; (5) supervision of schools or courses of instruction for health officers; (6) popular publicity work; (7) the control of communicable diseases or nuisances affecting more than one community or district; (8) the recording of vital statistics; (9) the inspection and control of foods and drugs; (10) the examination and control of public water supplies and sewage disposal plants; (11) supervision over the manufacture of antitoxins and vaccines; (12) supervision over hospitals and sanatoriums for tuberculosis; (13) supervision over maternity, infancy and child hygiene work, and (14) supervision over public health nursing service.

4. *The Federal Health Authorities.*—Authority for the administration of federal health work is divided among numerous bureaus and departments of the federal government, such as: (1) the Bureau of the Public Health Service (including the Hygienic Laboratory) in the Treasury Department; (2) the Bureaus of Chemistry and Animal Industry in the Department of Agriculture; (3) the Bureau of the Census (including the Division of Vital Statistics) in the Department of Commerce, and, (4) the Children's Bureau in the Department of Labor.

Other phases of public health work are at times covered by other federal departments, including the medical departments of the army and navy.

The chief functions of the federal health agencies are of a general advisory nature, including a vast amount of investigation. Executive functions have to do only with interstate and international problems, such as: (1) federal and maritime quarantine; (2) supervision over serums, vaccines, foods, drugs and other materials passing from one state to another; (3) supervision over sanitary matters pertaining to interstate transportation on trains and boats; (4) medical examination of immigrants, and (5) administration of the federal pure food laws.

In addition to the public health officers (local, county, state and federal) mentioned above, are numerous officers of voluntary or unofficial health organizations throughout the United States. These agencies are of great value in the promotion of health activities, and are helpful allies to all public officials. One of the important functions of health officers is an active cooperation with all such voluntary organizations.

THE PRIVATE PRACTITIONER

As indicated previously, the most essential requirement for the ultimate success of public health administration, local, state and federal, is a sympathetic cooperation between the private practitioners of medicine and surgery and the public health authorities. It may be stated without much fear of contradiction that the private practitioner of medicine is potentially the most important unit in public health work. On him at present largely rests the success or failure of such work. In the warfare against disease and premature death, the private practitioner has the function and field of activity analogous to those of the infantry on the firing line or in the trench. While much may be said in favor of the thesis that public health service is not a medical monopoly, it must be admitted that it would be more difficult to carry on successful public health work without the physician than without the other specialists who make up the public health profession. Especially is this true when we consider the "new public health," which takes account chiefly of the individual and his personal relation to the community.

If the private practitioner has failed in the past to take his proper place and to assume his true function in preventive medicine, it is because of the fact that he has thought too much of his individual rights and prerogatives and too little of his obligations and responsibilities to the public.

Without attempting to go into detail as to the functions or duties of the private practitioner in relation to public health, it may be stated that his chief obligations are:

1. Legal obligations; including: (*a*) The prompt and accurate reporting of births, (*b*) The prompt and accurate reporting of deaths, (*c*) The prompt and accurate reporting of all diseases required to be reported. 2. Professional or moral obligations, including: (*a*) Early and accurate diagnosis, (*b*) Prompt and efficient treatment, (*c*) Education of his patient as to the patient's future needs, and as to the patient's own relation to the health of the community, (*d*) Cooperation with the constituted health authorities.

In many instances, private practitioners have been on the "black list" of health officers because they have failed too frequently in their legal responsibilities. To the shame of the medical profession it may be said that far too frequently its members are haled into court for neglect of such manifestly important duties. Moreover, many private practitioners fail in fulfilling their moral obligations when they go no further than to make a diagnosis and to outline a course of treatment, and forget the necessary education of their patient on matters pertaining to personal and community hygiene.

On the other hand, the private practitioner has certain rights which must be carefully considered. First, he has a right to demand that the health officer with whom he is associated shall be scientifically trained and not a mere politician. If the health officer has not a medical degree, he should at least have a degree or certificate in public health. Although the holding of a medical degree does not fully qualify a person for the position of health officer, the public still is prone to demand a physician as health officer. While the ideal training for a health officer is one that combines a medical and a public health degree, it may be that in the future more and more nonmedical, technically trained sanitarians will be employed, at least in the subordinate positions. The practitioner, as well as the public at large, has a right to require that even the medical health officer shall have had some training in preventive medicine—at least a short course. Let it be hoped that we shall never return to the custom of employing untrained laymen for the important position of health officer.

Second, the private practitioner has the right to ask (as he is asking) the question, "What is to become of medical practice?" and he is equally entitled to a reasonable answer. In the last analysis, this answer must and will come from the public. If the public is perfectly satisfied with present-day methods of private medical practice and is certain that it is receiving the fullest possible benefit therefrom, both from curative and preventive standpoints, private medical practice will continue as it has for many generations past. If, on the other hand, the public is not satisfied that present methods of medical practice are adequate for present and future needs in the conservation of health and the prevention and cure of disease, then old systems and methods of practice must go and be replaced by others.

In the formation of public opinion as to the best methods of future medical practice, the private practitioners have as one of their chief functions and fields of activity the molding of such opinion. In other words, the practitioners must take the leadership in developing an adequate program to meet the demands of an advanced age, and of modern conditions. As some one has said, "The family physician must become more and more the family health adviser."

What is needed is not "state medicine," but organized medicine; medicine which is organized in such a way that while it remains largely in the hands of private practitioners, it will reach rich and poor, city folk and country folk, children and adults, not only after disease has gained a foothold, but before disease has become apparent, and while the individual is yet well and strong. The practitioner of the future must work and

think more in terms of physiology and less in terms of pathology. In the medical schools of the past and present, the departments of pathology have been and still are the outstanding and most popular departments, while those of preventive medicine have had to fight for existence. In the medical schools of the future, the departments of pathology must naturally fade into insignificance compared to the growing departments of physiology, hygiene and preventive medicine. Let the curriculum makers give less time to the "dead house" and cirrhotic livers and more time to the houses of the living and the principles of hygiene.

As defined by one of the present-day leaders in personal and community hygiene:

> Public health is the science and art of preventing disease, prolonging life and promoting physical health and efficiency through the organized community efforts for the sanitation of environment, the control of community infections, the education of individuals in principles of personal hygiene, the organization of medical and nursing service for the early diagnosis and preventive treatment of disease, and the development of social machinery which will insure to every individual in the community a standard of living adequate for the maintenance of health.

The private practitioner and the health officer must become intimately associated in working out such a forward-looking program for the prevention of disease and the conservation of health. While their functions and fields of activities differ in some minor respects, in a large sense their obligations and responsibilities are one.

Exchange National Bank Building.

THE FACTOR OF DILUTION IN GASTRIC ANALYSIS *

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The great variety of "acidity curves" as obtained by the fractional method of gastric analysis, and the different acid concentrations as determined by the single aspiration method, have been interpreted mainly in the light of secretory variations. The factor of unknown dilution of the acid by the commonly used test meal has been ignored.

In both the single aspiration and the fractional methods of gastric analysis, it is customary to give as part of the test meal (Ewald, Dock and Boas' oatmeal gruel) from 150 to 500 c.c. of fluid on the fasting stomach or after the removal of the fasting contents.[1] In the single aspiration method, the gastric contents are removed at forty-five minutes or one hour after the test meal, and the acidity is determined. In the fractional method, samples (from 6 to 15 c.c.) of gastric contents are taken at fifteen minute intervals for a definite period, usually two hours or until the stomach is empty. The acidity of these successive fifteen minute samples is determined, and from it the so-called "secretory curve" is charted. It is obvious that until the fluid taken with the test meal has left the stomach, the dilution of the gastric juice by the fluid of the test meal is a factor in determining the acid concentration of a given sample. This dilution is dependent on several factors, namely: (1) rate of secretion of the gastric juice; (2) the emptying rate during the examination of the particular stomach for its fluid contents; (3) the amount of fluid taken with the test meal, and (4) other diluting factors, as saliva, mucus and duodenal contents.

In this work it was the purpose to establish the importance of dilution of the gastric juice by the fluid of the test meals, both in determining the "height of acidity" and the character of the so-called "secretory curve" as obtained by fractional analysis, and in determining "gastric acidity" by the single aspiration method.

TABLE 1.—*Findings in Group B, Ten Medical Students Without Gastro-Intestinal Symptoms* *

Subject	P. S. P. Concentration, per Cent.	Total Acidity	Corrected Total Acidity
1. M. F.	42	28	48
2. R. E.	44	30	53
3. C. D.	36	27	42
4. E. G.	40	37	61
5. H. F.	52	32	66
6. O. E.	60	32	80
7. B. F. F.	42	30	51
8. M. D.	52	36	75
9. J. D.	58	37	88
10. B. F.	45	26	47
Average	47	31	59

* Dye concentration, total acidity as ordinarily obtained, and "corrected total acidity" of the gastric contents one-half hour after a test meal, consisting of two slices of zwieback and 400 c.c. of distilled water containing 1 c.c. of a solution of phenolsulphonephthalein.

TABLE 2.—*Findings in Group C, Ten Medical Students Without Gastro-Intestinal Symptoms* *

Subject	P. S. P. Concentration, per Cent.	Total Acidity	Corrected Total Acidity
11. R. F. L.	44	49	87
12. F. R.	38	50	81
13. L. K. F.	44	40	71
14. M. K.	34	43	65
15. Hen.	36	34	58
16. J. G. M.	40	32	58
17. Lit.	22	49	62
18. W. M. J.	Trace	80	80
19. M. G. H.	28	22	31
20. V. T. K.	34	62	94
Average	32	46	67

* Dye concentration, total acidity as ordinarily obtained, and "corrected total acidity" of the gastric contents one hour after a test meal consisting of two slices of zwieback and 400 c.c. of distilled water containing 1 c.c. of a solution of phenolsulphonephthalein.

PROCEDURE

In the subjects without gastro-intestinal symptoms (fifty-one medical students) the class, having undergone a fast of fourteen hours, was divided into five groups. Group A (twelve) had the fasting contents of the stomach removed. The remaining groups B (eleven), C (ten), D (ten) and E (eight) were given a test meal consisting of two pieces of zwieback (approximately 20 gm.) and 400 c.c. of distilled water containing exactly 1 c.c. of a solution of phenolsulphonephthalein[2] (1 c.c. = 0.006 gm. of substance). The gastric contents of Group B were removed at one-half hour, of group C at one hour, of group D at one and one-half hours, and of group E at two hours after the meal had been finished. In the patients with digestive symptoms (sixty-seven), the majority of whom were from the gastro-intestinal division of the medical clinic of the Washington University dispensary, both the single aspiration and the fractional methods were employed. The Rehfuss type of soft stomach tube was

* Read before the Washington University Medical Society, April 9, 1923.

* From the Departments of Medicine and Biological Chemistry of Washington University Medical School.

1. Knapp, V.: Standardization of Test Meals, New York M. J. 115: 695-698 (June 7) 1922.

2. This solution of phenolsulphonephthalein, as prepared by Hynson, Westcott & Dunning, was suggested for use in these experiments by Dr. A. P. Briggs.

used in all experiments. The subjects on whom the single aspiration method was employed were given a test meal consisting of one shredded wheat biscuit (approximately 20 gm.) and 400 c.c. of tap water containing 1 c.c. of a solution of phenolsulphonephthalein. The gastric contents were aspirated at forty-five minutes after the meal had been finished. In the fractional method, from 10 to 15 c.c. of the gastric chyme was removed at fifteen minute intervals by the syringe method, care being taken to empty the tube after each aspiration by introducing a syringeful of air through the tube. Samples containing excess of bile and mucus were not used.

Determining the Total Acidity of the Gastric Contents.—The total acidity was determined by titrating against tenth normal sodium hydroxid, phenolsulphonephthalein being used as an indicator if the dye was present in sufficient concentration; otherwise a few drops of phenolphthalein were used (there is a very slight difference of the p_H at which the color change occurs with the two indicators, but no appreciable difference in the total acidity titration). Of the subjects without gastro-intestinal symptoms, each group was in charge of an instructor of the department of biologic chemistry, who personally made the titration for total acidity. The acidity was expressed in terms of the number of cubic centimeters of tenth normal sodium hydroxid required to neutralize 100 c.c. of gastric contents.

Estimating the Dilution of a Given Sample by the Fluid Taken with the Test Meal: "Corrected Total Acidity."—It was assumed that phenolsulphonephthalein remains in solution while in the stomach, and is progressively carried with the fluid of the test meal through the pylorus into the duodenum. It is the opinion of physiologists that practically no water is absorbed from the stomach.[3] Therefore the dye concentration of a given sample of the gastric contents is indirectly an index to the dilution of the gastric juice by the fluid taken with the test meal. The dye concentration was determined in the following manner: Two cubic centimeters of a filtrate of the sample examined was placed in a cup of the Hellige colorimeter and made alkaline by the addition of 2 or 3 drops of 40 per cent. sodium hydroxid, and the color compared against a standard solution of phenolsulphonephthalein of the original concentration taken with the test meal (400 c.c. of water containing 1 c.c. of a solution of phenolsulphonephthalein and 3 drops of 40 per cent. sodium hydroxid). The colorimetric reading of the dye concentration of the sample was interpreted to represent the approximate percentage of dilution of the gastric juice by the fluid of the test meal still remaining in the stomach. By corrected total acidity is meant the acidity of the gastric contents, at a given phase of digestion, after the removal of the factor of dilution by the fluid of the test meal. For example (forty-five minute specimen, Table 5), the dye concentration of the sample of gastric contents was 44 per cent. of the dye concentration of the fluid taken with the test meal. It is obvious that, in 100 c.c. of gastric contents, 44 c.c. consisted of water taken with the test meal and only 56 c.c. was directly related to gastric secretion; and as 58 was the total acidity of the diluted sample as ordinarily obtained, then the corrected total acidity would be 103:

$$\frac{58 \text{ (acidity as ordinarily obtained)} \times 100}{100 - 44 \text{ (percentage of dilution)}} = 103$$

TABLE 3.—*Findings in Group D, Ten Medical Students Without Gastro-Intestinal Symptoms**

Subject	P. S. P. Concentration, per Cent.	Total Acidity	Corrected Total Acidity
21. W. W. R.	14	35	41
22. Sie.	18	25	30
23. J. McC.	24	60	79
24. C. A. S.	0	25	25
25. R. M. M.	12	70	80
26. H. P. R.	42	46	79
27. W. R. P.	24	66	87
28. E. P. S.	Trace	38	38
29. Sap.	10	49	54
30. N. W. S.	36	4	6
Average	18	42	52

* Dye concentration, the total acidity as ordinarily obtained and the "corrected total acidity" of the gastric contents one and one-half hours after a test meal consisting of two slices of zwieback and 400 c.c. of distilled water containing 1 c.c. of a solution of phenolsulphonephthalein in ten medical students without gastro-intestinal symptoms.

TABLE 4.—*Findings in Group E, Eight Medical Students Without Gastro-Intestinal Symptoms**

Subject	Stareh	P. S. P. Concentration, per Cent.	Total Acidity	Corrected Total Acidity
31. W. G. W.	Present	34	19	29
32. F. S.	0	Trace	7	7
33. R. G. Y.	Present	Trace	18	18
34. G. M. B.	Present	Trace	54	54
35. Ste.	Present	0	51	51
36. K. Z.	Present	0	34	34
37. G. D. W.	Present	24	47	62
38. E. H. T.	Present	Trace	40	40
Average		7	34	37

* Dye concentration, total acidity as ordinarily obtained, and "corrected total acidity" of the gastric contents two hours after a test meal consising of two slices of zwieback and 400 c.c. of distilled water containing 1 c.c. of a solution of phenolsulphonephthalein.

RESULTS OF EXPERIMENTS

Subjects Without Gastro-Intestinal Symptoms.—From a study of Tables 1, 2, 3 and 4, it is possible to ascertain the variable relation of the fluid taken with the test meal to the remaining gastric contents at half, one, one and one-half and two hours after a test meal consisting of two pieces of zwieback and 400 c.c. of distilled water. At half hour (Table 1), the dye concentration, which may be interpreted to mean percentage dilution of the sample by the water, varied from 36 to 60 per cent., with an average dilution of 47 per cent., and the total acidity as ordinarily obtained varied from 26 to 37, with an average of 31, while the corrected total acidity varied from 42 to 88, with an average of 59. The minimum variation between the total acidity and the corrected total acidity in any one individual was 15, with a maximum variation of fifty-one degrees.

At one hour (Table 2) the dye concentration of the gastric contents varied from a trace to 44 per cent., with an average of 32 per cent. The total acidity, as ordinarily obtained, varied from 22 to 80, with an average of 46. The corrected total acidity for this group varied from 31 to 94, with an average acidity of 67. The minimum variation between the total acidity, as usually obtained, and the corrected total acidity in the same individual was 0, while the maximum variation in any one individual was 38.

At one and one-half hours (Table 3) the dye concentration of the gastric contents varied from 0 to 42 per cent., with an average of 18 per cent. The total acidity, as ordinarily obtained, varied from 4 to 70, with an average of 42. The corrected total acidity

3. Howell's Text Book of Physiology, Ed. 7, p. 791.

varied from 6 to 87, with an average of 52. The minimum variation between the total acidity, as ordinarily obtained, and the corrected total acidity was 0, and the maximum 33.

At two hours (Table 4) the dye concentration of the gastric contents varied from 0 to 34 per cent., with an

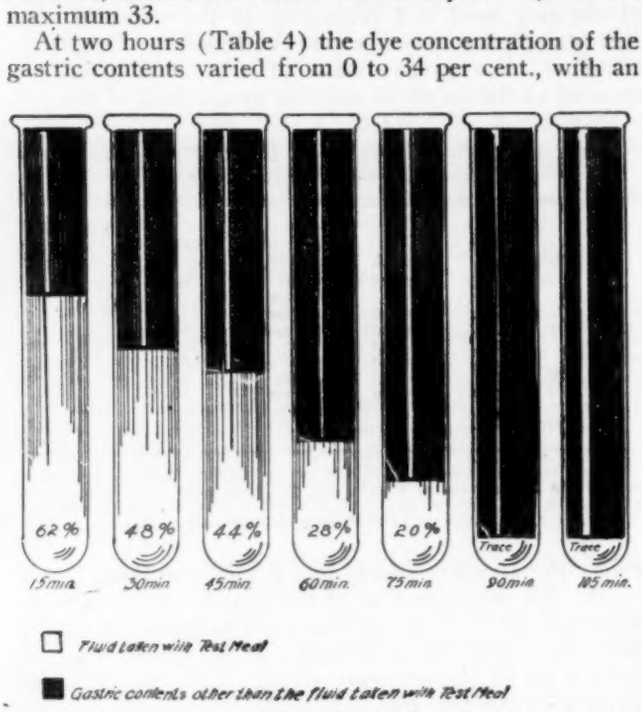

Fig. 1 (from Table 5).—Relation of the fluid (400 c.c.) taken with the test meal to the remaining gastric contents in successive fifteen minute samples obtained by the fractional method of gastric analysis in a case of duodenal ulcer with pyloric obstruction.

average of 7 per cent. The total acidity, as ordinarily obtained, varied from 7 to 54, with an average of 34. The corrected total acidity varied from 7 to 62, with an average of 37. The minimum variation between the total acidity, as ordinarily obtained, and the corrected total acidity in any one individual was 0; the maximum was 15.

Subjects with Gastro-Intestinal Symptoms.—From a study of Tables 5 and 6, and Figures 1 and 2, it is possible to ascertain the variable relation of the fluid

TABLE 5.—*Findings by Rehfuss Fractional Method in a Case of Duodenal Ulcer with Pyloric Obstruction* *

Time, Minutes	Amount Recovered, C.c.	P. S. P. Concentration, Starch	per Cent.	Total Acidity	Corrected Total Acidity
15	14	Plus	62	36	99
30	18	Plus	48	45	86
45	15	Plus	44	58	103
60	14	Plus	28	63	88
75	16	Plus	20	78	97
90	14	Plus	Trace	100	100
105	15	Plus	Trace	104	104

* Dye concentration, total acidity as ordinarily obtained, and "corrected total acidity" in successive fifteen minute samples obtained by fractional analysis after a test meal consisting of 400 c.c. of oatmeal gruel containing 1 c.c. of a solution of phenolsulphonephthalein.

taken with the test meal to the remaining gastric contents, and the influence of this dilution on the acid concentration of successive fifteen minute samples as obtained by fractional analysis.

In a case of duodenal ulcer with obstruction (Table 5, Figs. 1 and 2), 62 per cent. of the first fifteen minute sample was fluid taken with the test meal, only 38 per cent. being directly related to gastric secretion. Figure 2 shows diagrammatically the influence of this dilution on the "acidity curve" as ordinarily obtained by fractional analysis.

Table 6 and Figure 3 show the relative proportion of the fluid taken with the test meal to the remaining gastric contents in successive fifteen minute samples of gastric chyme, in a case of duodenal ulcer with hypermotility. Thirty-eight per cent. of the first fifteen minute sample was fluid taken with the test meal, while at forty-five minutes, owing to the rapid emptying rate, the fluid taken with the test meal had completely disappeared from the stomach. Figure 4 shows diagrammatically the influence of this rapid emptying rate and

TABLE 6.—*Findings by Rehfuss Fractional Method in a Case of Duodenal Ulcer with Hypermotility of the Stomach* *

Time, Minutes	Amount Recovered, C.c.	P. S. P. Concentration, Starch	per Cent.	Total Acidity	Corrected Total Acidity
15	12	Plus	38	30	48
30	13	Plus	20	70	57
45	16	Plus	Trace	80	80
60	12	0	0	88	88

* Dye concentration, total acidity as ordinarily obtained, and "corrected total acidity" in successive fifteen minute samples obtained by fractional analysis after a test meal consisting of 400 c.c. of oatmeal gruel containing 1 c.c. of a solution of phenolsulphonephthalein.

diminished dilution on the character of the "acidity curve" as obtained by fractional analysis.

Figures 5 and 6 show diagrammatically the variable dilution of the gastric contents by the fluid taken with the test meal, and its influence on the acid concentration at forty-five minutes after a test meal (400 c.c. of water, 1 c.c. of phenolsulphonephthalein and one shredded wheat biscuit) as obtained by the single aspiration method. In sixty-seven miscellaneous cases, the maximum dilution was 62 per cent., and the minimum dilution was 0, with an average dilution of 35 per cent. The average total acidity as ordinarily obtained was 51, and the average corrected total acidity, 79.

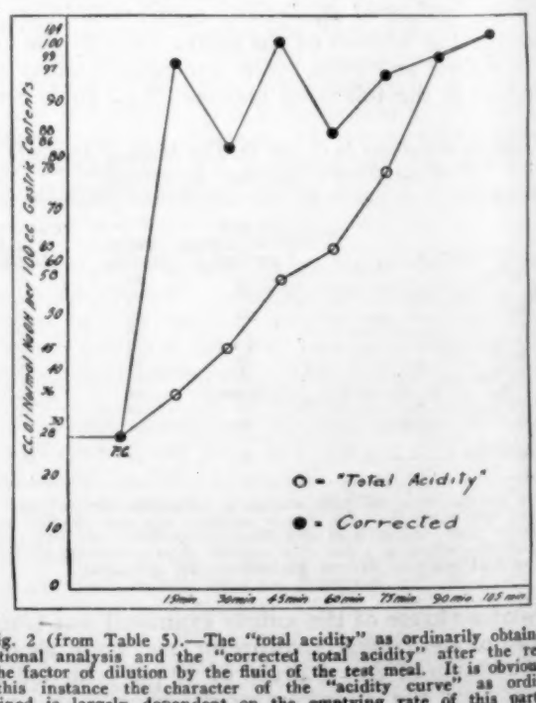

Fig. 2 (from Table 5).—The "total acidity" as ordinarily obtained by fractional analysis and the "corrected total acidity" after the removal of the factor of dilution by the fluid of the test meal. It is obvious that in this instance the character of the "acidity curve" as ordinarily obtained is largely dependent on the emptying rate of this particular stomach for fluid.

COMMENT

In this work it has been shown that when fluids form a part of the test meal given on a presumably empty stomach, the dilution of the gastric juice by the fluid

taken with the test meal is a factor of considerable importance in determining the "height of acidity" at a given phase of digestion, and the character of the "acidity curve" as obtained by fractional analysis. This factor of variable dilution may also be important in determining the "acidity" as obtained in the single aspiration method.

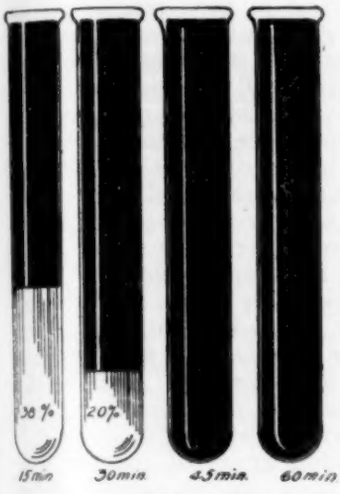

Fig. 3 (from Table 6).—Relation of the fluid of the test meal (400 c.c.) to the remaining gastric contents in successive fifteen minute samples, as obtained by fractional analysis in a case of duodenal ulcer with hypermotility of the stomach.

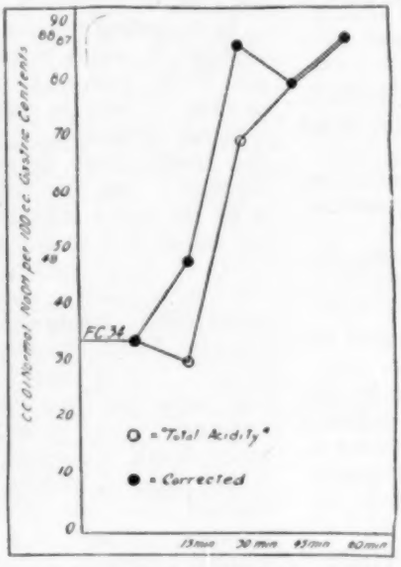

Fig. 4 (from Table 6).—The "total acidity" as ordinarily obtained by fractional analysis, and the "corrected total acidity" after the removal of the factor of dilution by the fluid test meal. The relation between the rapid evacuation of the fluid from the stomach and the character of the "acidity curve" should be noticed particularly.

Bennett and Ryle,[4] in discussing the different factors producing the "curves of gastric acidity" as obtained by the fractional method of gastric analysis, mention the secretion of hydrochloric acid as the most important acid factor, while saliva, regurgitation of duodenal contents, and the secretion of the pyloric mucous membrane are, according to these authors, the most important alkaline factors. They further state that "a recognition of these principles gives the explanation of the phases usually seen in the chart obtained from a fractional gastric analysis." Although Bennett and Ryle used a fluid test meal (500 c.c. of oatmeal gruel), given on a presumably empty stomach, and obtained 10 c.c. samples of the gastric contents at fifteen minute intervals, they made no mention of the factor of variable dilution of the acid in the successive specimens by the fluid test meal, and also apparently ignored the factor of variations in acid concentration of different portions of gastric chyme.[5]

Carlson,[6] in discussing gastric secretion, states that "actual hyperacidity in the sense of a gastric juice of greater than normal acidity (0.45-60 per cent.) has not been demonstrated in any disease and probably does not exist." This should not be confused with "clinical hyperacidity," which is a relative term. From clinical experience we have learned to expect, using the Ewald test meal, that the total acidity of the chyme at forty-five minutes normally varies from 30 to 60 in terms of tenth normal sodium hydroxid, which is probably about half the acidity of the gastric juice as secreted. However, this acidity as obtained by gastric analysis is not generally recognized to be the resultant of several factors, acid, alkali and especially dilution, and so far as I am aware no successful method has been formulated for determining which of these factors is at fault in a given case. In certain abnormal conditions, especially in nonmalignant lesions about the pylorus, as duodenal ulcer, a relative hyperacidity, as determined by clinical methods, is frequently found and attributed to hypersecretion. The importance of such a discrimination as mentioned above is well illustrated in Table 2, in the case of W. M. J., who had a total acidity of 80 (hyperacidity) at one hour, which can be explained by the rapid evacuation of the diluting fluid from the stomach. Other students at the same period with a so-called normal acidity as usually determined had a higher acidity after the removal of the factor of dilution. It is especially interesting to note that in a group of sixty-seven miscellaneous cases in which there were gastro-intestinal symptoms, the single aspiration method being used, the factor of dilution, which varied from 0 to 62 per cent., with an average dilution of 35 per cent. at forty-five minutes, was in itself sufficient to change the average total acidity of 51 (considered normal) as usually obtained to 79 (relative hyperacidity). On the other hand, in the normal cases none of the corrected acidities were higher than 100, while figures as high as 136

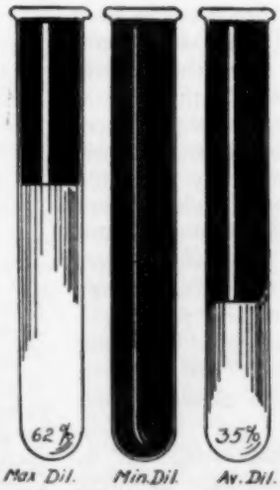

Fig. 5.—Maximum, minimum and average dilution at forty-five minutes after a test meal (one shredded wheat biscuit, and 400 c.c. of water containing 1 c.c. of a solution of phenolsulphonephthalein) of the gastric contents by the fluid taken with the test meal, in a group of sixty-seven miscellaneous cases in which there were gastro-intestinal symptoms.

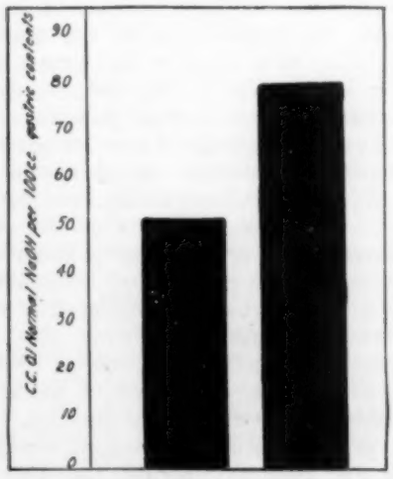

Fig. 6.—The left hand column shows the average total acidity as ordinarily obtained, and the right hand column shows the corrected total acidity of the gastric contents, forty-five minutes after a test meal (one shredded wheat biscuit, and 400 c.c. of water containing 1 c.c. of a solution of phenolsulphonephthalein), in sixty-seven miscellaneous cases in which there were gastro-intestinal symptoms.

corrected total acidity were repeatedly found in abnormal conditions; therefore the factor of dilution is apparently only one of the factors that may be disturbed in a given case. I would emphasize that gastric hypersecretion and gastric hyperacidity, as determined

4. Bennett, T. I., and Ryle, J. A.: Studies in Gastric Secretion and Study of Normal Gastric Function, Based upon Investigation of One Hundred Healthy Men by Means of the Fractional Method of Gastric Analysis, Guy's Hosp. Rep. **71**: 286-318 (July) 1921.

5. Gorham, F. D.: Variations in Acid Concentration in Different Portions of the Gastric Chyme and Its Relation to Clinical Methods of Gastric Analysis, Arch. Int. Med. **28**: 434-440 (April) 1921.

6. Carlson, A. J.: Physiol. Rev. **3**: 32 (Feb. 6) 1923.

by clinical methods, are not always synonymous, and that the "acidity curve," as ordinarily obtained by fractional analysis, is not necessarily a "secretory curve." In the future it will be necessary to measure and correlate more accurately these several factors, acid, alkali and dilution, in order to speak quantitatively of gastric acidity.

CONCLUSIONS

1. The emptying rate of the stomach for fluids is variable in different individuals without gastro-intestinal symptoms.

2. When 400 c.c. of fluid is given as part of a test meal, it may act as a diluent of the gastric juice for more than two hours.

3. In fractional gastric analysis, variations in dilution of the successive fifteen minute samples by the fluid of the test meal are of fundamental importance in determining the "height of acidity" and the character of the so-called "secretory curve."

4. The variable dilution of the gastric juice by the fluid taken with the test meal is a factor of importance in determining the "acidity" as ordinarily obtained in the single aspiration or one hour method of gastric analysis.

THE TREATMENT OF NEUROSYPHILIS *

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BOSTON

In considering the possibility of treatment of syphilis of the central nervous system, there are certain factors that must be given particular attention. Among these may be mentioned the potency of our antisyphilitic drugs, the varying virulence of the spirochetes in each case, the peculiarities of the central nervous system, whereby it is more or less separated from the viscera, the localization of the spirochetes within the central nervous system, and the pathologic processes produced.

It must be admitted that our present-day antisyphilitic remedies, especially arsphenamin, mercury and the iodids, are far from ideally satisfactory in the treatment of syphilis, no matter what the stage of the disease. Even in the early primary stage of syphilis, it takes quite a large amount of treatment with these drugs to produce what is considered a cure, and there is a certain amount of evidence that leads one to doubt whether an actual cure is ever obtained. At any rate, it often takes a number of months to obtain consistently negative serologic findings.

When treatment is begun somewhat later, that is, in the secondary period, the time necessary to effect reasonably satisfactory results is greatly lengthened. In the later stages, even when there are no evidences of active lesions, it may take months or years of treatment to produce a consistently negative Wassermann reaction in the blood. This is true of cases receiving early treatment that has not been entirely effective, as well as of cases coming under treatment for the first time when in the tertiary stages. Indeed, there are many cases which are said to be "Wassermann fast," meaning thereby that it is apparently impossible to produce a negative Wassermann reaction even after years of vigorous treatment. In patients having evidence of definite cardiovascular lesions, it is doubtful whether any one would expect to get a complete sterilization of the spirochetes in the body, no matter what the type of treatment given.

In reviewing the life history of persons affected with syphilis, it seems to me that patients may be divided into three groups according to their reaction to the disease. There is one group of patients who, even without treatment, apparently suffer no particularly bad results from the spirochetal infection. They go through a long life with practically no symptoms. It is by no means infrequent to see patients 60 years of age and older who give a history of a syphilitic infection thirty or forty years before, whose blood Wassermann reaction is positive and who, despite the fact that no antisyphilitic treatment was ever given them, are in vigorous health and show no definite syphilitic manifestations. On the other hand, there is a group of patients who from the time they obtain their infection suffer from one variety of lesion after another, and for whom antisyphilitic treatment does not give good results. These patients, despite what is done for them, seem doomed from the moment they have received their infection. There is a third group of patients who, without treatment, suffer from syphilitic manifestations, but for whom antisyphilitic therapy produces most satisfactory results.

How large each of these groups may be is a matter of conjecture. Whether the difference in results is due to the difference in type or virulence of the infecting organism, or whether it is the effect of certain immunity responses on the part of the patient, or a combination of these factors, or a matter of accidental localization of the lesions, are further questions for which we have no adequate answers.

However, with these three groups in mind, we have a working hypothesis which allows us to understand that some patients will react favorably to a very small amount of treatment. These are patients who approach Group 1 in their reaction to the disease. There are other patients on whom fairly satisfactory results are obtained only after a great deal of treatment. This group approaches the second, or recalcitrant, type.

SEPARATION OF CENTRAL NERVOUS SYSTEM

If this is a fair presentation of the problem of systemic syphilis, it would likewise hold for neurosyphilis. Here, in addition, there are certain factors dependent on the anatomy and physiology of the nervous system which need particular consideration. The central nervous system differs from the other systems of the body in that it seems to be separated off. Substances circulating in the blood system rarely enter into the central nervous structure. This may be shown most strikingly in cases of jaundice. In severe cases of jaundice, practically every tissue of the body with the exception of the central nervous system may be colored by the icteric pigments. This is a common phenomenon. Thus, in a case of acute yellow atrophy in which I recently performed necropsy, there was a marked yellow discoloration of all the tissues and fluids, including the pericardial, pleural and peritoneal fluids, but the cerebrospinal fluid and the tissues of the nervous system were entirely free from any evidence of this yellow discoloration. In other words, there was an adequate and efficient filter which kept the pigment from the nervous tissue.

* Read before the joint meeting of the Section on Pharmacology and Therapeutics and the Section on Dermatology and Syphilology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

What is true of the icteric pigment is true, to a great extent, of various drugs. Most drugs have only a slight power of penetration into the central nervous system. Unfortunately, antisyphilitic drugs, such as arsenic, mercury and bismuth, are all heavy metals with large molecules that have great difficulty in making their way into the nervous tissue. While there is evidence that they do reach this tissue in many cases, it is nevertheless true that they penetrate only in very small amounts, as compared with their presence in the rest of the body. This definite walling off or separation of the central nervous system from the rest of the body is well illustrated in cases of syphilis. For instance, in many cases of syphilis in which there is a fairly generalized infection involving a large part of the bodily structure, the central nervous system may practically escape. The Wassermann reaction is frequently positive in the blood and negative in the spinal fluid. On the other hand, in many cases of syphilis of the nervous system, there is little evidence of any visceral syphilis, while the spinal fluid Wassermann reaction may be strongly positive, and the blood Wassermann reaction may be negative. This is the serologic status in approximately 40 per cent. of the cases of tabes and meningovascular syphilis.

In the stage of generalization of the infection, the central nervous system is involved in a high percentage of cases. As a rule, the immunity reactions of the body and the central nervous system itself are sufficient to sterilize this process, and no subsequent symptoms or evidence of disease results. There are many cases, however, in which the process continues in the central nervous system, producing pathologic lesions and abnormal spinal fluids. In a certain number of cases, this process of pathologic change in the central nervous system goes on despite our usual methods of antisyphilitic treatment. Thus, even though a patient is placed under antisyphilitic treatment during the early primary period of the disease, a positive cerebrospinal fluid may be found some months later, despite continued systemic treatment.[1]

CASE 1.—J. S., a man, in the early twenties, who developed a primary lesion, immediately underwent treatment, receiving six injections of arsphenamin and thirty injections of mercury. Six months after the appearance of the chancre, and while still under treatment, he developed a ptosis of the eyelid. A year later, a hemiplegia developed. Fourteen intravenous injections of arsphenamin were given, but despite this, the spinal fluid was positive.

In cases such as this one, the blood Wassermann reaction may never become positive,[2] or, if it does become positive, it may be made negative by treatment and no bodily symptoms ensue, despite which the cerebrospinal fluid remains positive as evidence that an active syphilitic process continues in the central nervous system.

Similarly, in later stages of the disease, antisyphilitic treatment may clear up all evidence of visceral infection without giving the slightest evidence of effect on the nervous system lesions either symptomatically or serologically. Not only is this the case with patients who have evidence of central nervous system involvement at the time treatment is begun, but also patients who are first seen with negative spinal fluids may develop central nervous system involvement with a positive fluid while undergoing systemic treatment.

CASE 2.—In July, 1914, Mr. G. was suffering from pain in the chest, gastric distress, and symptoms which he referred to his heart. The Wassermann reaction in the blood was strongly positive at this time, but the spinal fluid was entirely negative. His general symptoms improved under antisyphilitic treatment consisting of arsphenamin, mercury and iodid. This treatment was continued from July, 1914, to July, 1920. The blood Wassermann reaction remained positive all this time. In July, 1920, because of complaint of severe headache, a lumbar puncture was performed; the fluid showed 220 cells per cubic millimeter, a positive Wassermann reaction, and a very strong gold reaction. At the time treatment was started in 1914, the spinal fluid was negative, but after six years of continuous systemic treatment, the spinal fluid had become positive, and clinical symptoms relating to the nervous system appeared.

It is a common observation that patients are apparently made to have severe central nervous system reactions through the exhibition of antisyphilitic remedies. This is the so-called "neurorelapse." The majority of such neurorelapses are improved by the continuation of general treatment, but there are a few that are not improved.

This line of reasoning leads us to several conclusions:

1. Our antisyphilitic drugs are only relatively satisfactory even for cases of syphilis not of the nervous system.

2. The central nervous system is walled off from the general bodily structure both as regards the spirochete itself and the entrance of drugs from the blood stream into the nervous structure.

3. Cases in which antisyphilitic drugs might be potent if they reached the spirochete receive no benefit from systemic treatment.

4. The central nervous system involvement may be increased rather than favorably influenced by such therapy.

THE CENTRAL NERVOUS SYSTEM

It is necessary to consider more fully the structure of the central nervous system and its reactions to the spirochete before discussing the possibilities of the treatment of neurosyphilis. The central nervous system is surrounded by the meninges, dura and pia-arachnoid, which are nonnervous structures composed of mesodermal tissues, that is, connective tissue, mesothelium and blood vessels. This is a true mesenchymal tissue and reacts to the spirochetes as mesenchymal tissues do in other parts of the body; that is, there is an inflammatory reaction produced, with an infiltration of lymphocytes, and, in some instances, of plasma cells. The brain and cord are true nervous structures consisting of nerve cells and their processes, separated by neuroglia tissue. Degeneration is the only type of reaction possible for the true parenchyma, namely, the nerve cells. This is what occurs when the tissue is invaded by the spirochetes having pathogenic properties. The neuroglia tissue reacts by proliferation.

The pia, which is closely applied to the surface of the brain and cord, dips down into the sulci and sends prolongations into the nervous structure, carrying blood vessels with it. However, it is outside the nervous system; that is, separated from the nervous tissue by a neuroglia membrane. The blood vessels which run through the nervous system are also separated from the nerve tissue by a neuroglia lining. Various sclerotic and endarteritic changes occur, and inflammatory cells,

1. Scott, G. O., and Pearson, G. H.: Some Observations on Syphilis of the Central Nervous System, Am. J. Syphilis 4: 201 (April) 1920. Larkin, J. H., and Cornwall, L. H.: Value of Laboratory Diagnosis in Neurosyphilis, Am. J. Syphilis 3: 76 (Jan.) 1919. Gennerich, W.: Syphilis des Zentralnervensystems; ihre Ursachen und Behandlung, Berlin, 1921.

2. Nicolau: Recherches sur le liquide céphalo-rachidien dans le période primaire de la syphilis, Ann. de dermat. et de syph. 7: 200, 1919.

lymphocytes and plasma cells make their way into the coats of the vessels and into the perivascular spaces surrounding the vessels; these very rarely make their way into the nervous structure, but remain for the most part in the perivascular spaces, which are surrounded by the neuroglia envelop.

REACTION TO SPIROCHETE

From the histo-anatomic standpoint, the cases of neurosyphilis may be divided according to the type of tissue invaded and the response that must necessarily follow. Thus, there occurs a simple meningeal reaction in which the spirochete apparently localizes in the meninges. This mesenchymal tissue reacts in an inflammatory manner, becoming infiltrated with white blood cells. This type of reaction may be diffuse, taking in a large part of the meninges of either the cord, brain or both, or the lesion may be quite localized in a very small portion of the meninges, with variations between the very diffuse and very localized types of reaction. Gummatous formation occurs in the meninges. The important point is that such a location may be, and not infrequently is, purely meningeal, not taking in the true nervous structure, although there may be symptoms suggesting nervous tissue involvement due to the pressure of the thickened and inflamed pia. In such a process the prolongation of the pia into the sulci of the nervous system reacts in a similar fashion. This represents the true meningeal syphilis. Very frequently there is a reaction about the blood vessels so that there are vascular changes, in addition to the meningeal involvement. This combination represents a meningovascular syphilis. This type of lesion, namely, the true meningeal or meningovascular, includes the cases which, from the clinical standpoint, are called cerebrospinal, spinal or cerebral syphilis, depending on the localization of the lesion. On the other hand, the spirochete may affect the blood vessels almost exclusively. Lesions of this type produce various forms of vessel sclerosis, leading most frequently to the formation of thrombi, but also to aneurysm and hemorrhage. As a rule, there is considerable perivascular infiltration, but not infrequently the process is largely sclerotic and obliterating, without much inflammatory reaction. When the involvement is almost entirely in the blood vessels of the nervous system, one speaks of a true vascular neurosyphilis.

But the spirochetes may invade the true nervous tissue itself. When this occurs, the response is in the form of degeneration of the parenchyma; that is, the nerve cells or their prolongations are killed. The neuroglia tissue proliferates. This is the essential feature of parenchymatous syphilis, and the clinical forms of this type of reaction include general paresis, tabes dorsalis, muscular atrophy due to death of the anterior horn cells, certain forms of epilepsy, etc. In the case of parenchymatous neurosyphilis, there is usually an associated meningeal and vascular disorder, so that in most cases of paresis and tabes, in addition to the changes in the nerve tissue, there occurs also some meningovascular disorder. This may be considered as a secondary, associated or complicating feature, although it may be responsible for many of the symptoms.

What has been said about the separation of the nervous structure from the soma and the filtration of substances circulating in the blood holds especially for the true nervous structure and, to a lesser degree, for the meningeal and vascular tissue, which, as has been stated, is really extranervous.

POSSIBILITIES OF TREATMENT

The problem of therapy for meningovascular syphilis is therefore essentially different from that of parenchymatous neurosyphilis. Meningovascular neurosyphilis, or, as it is frequently called, cerebrospinal syphilis, has always been recognized as rather favorable for antisyphilitic treatment. In the past, many cases have been found to react quite satisfactorily to mercury and the iodids. On the contrary, the cases of parenchymatous syphilis react quite unsatisfactorily to mercury and the iodids. From this fact arose the idea of parasyphilis, which includes general paralysis and tabes, as these cases were found to be quite recalcitrant to ordinary antisyphilitic treatment. With the introduction of arsphenamin, a more potent antisyphilitic drug, renewed attention was given to the treatment of syphilis of the nervous system, including the so-called parasyphilitic diseases.

The demonstration, by Noguchi and Moore [3] and by many others since,[4] that spirochetes often are present in large numbers in the nervous tissue in general paralysis and also in cases of tabes, has led to more and more attempts to treat all forms of syphilis of the nervous system. Especially important has been the invention of various forms of intrathecal treatments.

Bearing in mind the anatomic differences that exist in cases of neurosyphilis, the cases may be studied according to their response to various forms of therapy.

When one remembers the difficulty of effecting symptomatic and serologic improvement in some cases of dermatologic syphilis, it is to be expected that even more difficulty will be encountered in obtaining results in the treatment of neurosyphilis. Nevertheless, it is true that one may encounter a group of cases of neurosyphilis in which, with a relatively small amount of general treatment, symptomatic improvement and serologic cure results. Mercurial rubs or injections may be quite sufficient to accomplish satisfactory results.

CASE 3.—Mr. C. S. was brought into the hospital in a confused psychotic state. The neurologic examination showed dilated pupils, which, however, reacted well. The tendon reflexes were normal. There was considerable tremor and ataxia. The Wassermann reaction was positive in the blood and spinal fluid, and there were 80 cells per cubic millimeter, marked excess of albumin and globulin, and a strong general paralytic gold curve. Twenty injections of mercuric salicylate were sufficient to produce complete clinical remission, and the blood and spinal fluid became negative. The spinal fluid examined five months after the first test gave a negative Wassermann reaction, 4 cells per cubic millimeter; no globulin; normal albumin, and an entirely negative gold curve.

The type of case that responds satisfactorily to this mild treatment is in most instances a mild meningeal inflammation.

CASE 4.—Mr. A R., after suffering for a short time with severe frontal headache, suddenly developed a strabismus and ptosis. A history of syphilis acquired thirty years previously was obtained. The patient had hypertension, aortitis and chronic nephritis. The spinal fluid gave a positive reaction, suggesting the meningovascular type of neurosyphilis. With five injections of arsphenamin, the headache entirely disappeared; the strabismus and ptosis, which had been present for several months, cleared up immediately. With very little

3. Noguchi and Moore: A Demonstration of Treponema Pallidum in the Brain in Cases of General Paralysis, J. Exper. M. **17**: 232, 1913.
4. Jahnel F.: Die Spirochäten in Zentralnervensystem bei der Paralyse, Ztschr. f. d. ges. Neurol. u. Psychiatrie **73**: 370, 1921. Forster and Tomaszewski: Nachweis von lebenden Spirochäten in Gehirn von Paralytikern, Deutsch. med. Wchnschr. **39**: 1237, 1913. Wile, U. J.: Experimental Syphilis in Rabbit Produced by the Brain Substance of the Living Paretic, J. Exper. M. **23**: 199 (Feb.) 1916. Hauptmann: Ueber herdartige Spirochäten-Verteilung in der Hirnrinde bei Paralyse, Monatschr. f. Psychiat. u. Neurol. **45**: 59, 165, 1919.

treatment, the patient has had no recurrence of neurologic symptoms for the last seven years.

It does not follow, however, that all cases of apparently mild meningeal syphilis are so satisfactorily treated. The important point to bear in mind is that there is a group of cases showing clinical evidence of the involvement of the central nervous system and having characteristic spinal fluid changes which react promptly and satisfactorily to the type of ordinary routine treatment accorded to the simple cases of systemic syphilis.

The majority of cases of neurosyphilis will not react satisfactorily, however, to this mild form of therapy. Having eliminated from consideration those cases in which the patients recover promptly with mild systemic treatment, we find that among the remainder there is a group of cases which, when treated much more intensively but by exactly the same methods, that is, by the administration of mercury, the iodids and arsphenamin intravenously, improve symptomatically and serologically. These cases, no matter what the state of the disease, may develop signs or symptoms of neurosyphilis, and show very little tendency toward improvement when given arsphenamin in doses of approximately 0.3 gm. once a week, assisted by mercury and iodid, but will show relatively prompt improvement if the dose of arsphenamin is increased and the frequency of administration doubled.

CASE 5.—F. C. developed a primary lesion in July, 1915, when 49 years of age. He was treated by an experienced colleague, who gave him a number of injections of mercury, potassium iodid by mouth, and four injections of arsphenamin. Five months after his primary lesion, he developed convulsions and became confused. The blood and spinal fluid Wassermann reactions were both strongly positive; there were 4 cells per cubic millimeter; globulin was 3 plus, albumin 4 plus, and the colloidal gold reaction 5555555310. The patient was then put on more intensive treatment, receiving two injections of arsphenamin a week, the average dose being 0.6 gm. At the end of four weeks, that is, after about eight injections of arsphenamin, the spinal fluid was essentially negative, and he had symptomatically recovered.

The cases that follow this rule are, in the majority of instances, cases of meningovascular syphilis occurring in any stage of the disease, early or late. Some will show very mild symptoms and quite weak spinal fluid changes, whereas others of this group will have very severe symptoms, presenting all the features of grave prognostic significance, and have spinal fluid giving the reactions characteristic of cases of general paralysis. A good many cases of tabes dorsalis will respond quite well to relatively intensive systemic treatment. Often the irritative symptoms, such as excruciating pains, bladder trouble and crises, will disappear quite promptly, and the spinal fluid will return to normal reactions.

CASE 6.—Miss O. I., aged 37, was suffering from severe lancinating pains of eight years' duration. Neurologic examination showed diminished hearing in the left ear, and slight tremor of the hands and tongue; knee jerks and ankle jerks were absent, the gait was ataxic, and there was a marked Romberg sign. The pupils were unequal, both reacting but little to light. The spinal fluid and blood were positive. The clinical picture of tabes was complete. After a few injections of arsphenamin, given at weekly intervals, the patient became free from pain and her gait improved a great deal. Improvement has continued over a period of four years, during which time she has had no pain and is able to carry on her work. The very marked symptomatic improvement was obtained solely by the administration, intravenously, of arsphenamin in small doses given at intervals.

Occasionally, cases having all the clinical and laboratory symptoms of general paralysis may likewise respond in a most surprising manner, leading to a complete and long-continued remission, with essentially negative serologic findings.

CASE 7.—In September, 1920, Mr. N. H. developed a marked psychosis which, from the clinical and serologic point of view, was diagnosed as general paralysis. The Wassermann reaction was positive in the blood and strongly positive in the spinal fluid. There were 6 cells per cubic millimeter; globulin and albumin were increased, and there was a general paralytic gold reaction. There were Argyll Robertson pupils, a speech defect, a tremor of the tongue and facial muscles, and considerable ataxia. The patient was given arsphenamin twice a week, with a dosage of 0.3 gm. With this treatment, he made a rapid clinical improvement, and at the end of four months the spinal fluid became entirely negative; with the continuation of intravenous injections, he has remained symptom-free, with negative serologic findings to the present.

Thus, despite all the theoretical and practical difficulties encountered in the treatment of neurosyphilis, it is seen from a practical standpoint that almost all varieties of cases, namely, mild and severe meningovascular syphilis, tabes and general paralysis, will be found to improve to a degree that may be considered a clinical recovery through the ordinary forms of antisyphilitic treatment when this treatment is given intensively enough.

While intensive systemic treatment will improve some cases that appear to be of the severest type of neurosyphilis, other cases similar from the clinical standpoint, or even apparently of a much milder variety of meningeal syphilis, seem to derive no real benefit from such treatment. It is therefore necessary to regard each case on its own merits. It would seem reasonable to suppose that the most satisfactory effects are obtained in those cases in which the meningitic and perivascular reactions are fairly marked and of an acute character. Such changes are to be found in a certain number of cases of parenchymatous syphilis as associated or concomitant phenomena, and may be the cause of most of the symptomatology. However this may be, there are numerous cases both with indications of the meningovascular type of neurosyphilis and of the parenchymatous type which do not react satisfactorily to intensive systemic treatment. Some of these cases will be improved symptomatically and serologically by the use of intrathecal methods.

SERUM INJECTION

There are a number of special technics for the application of medicaments directly into the cerebrospinal fluid with the intention of getting the drugs into contact with the nervous tissue. The first method to be introduced into this country, and the one that is most largely used, is the Swift-Ellis method of lumbar subarachnoid injection of arsphenaminized serum. Mercurialized serum is sometimes substituted for the arsphenaminized serum. Abroad, the arsphenamin is frequently added directly to the cerebrospinal fluid, which is reinjected into the subarachnoid space. Other loci are used for the introduction of the serum. Injections into the lateral ventricles have been used for a number of years, especially for cases of cerebral syphilis; that is, general paralysis. More recently, Ayer[5] has introduced the cistern route whereby the serum can be placed directly in contact with the base of the brain. Spinal drainage, that is, the withdrawal of a

5. Ayer, J. B.: Puncture of the Cisterna Magna, Arch. Neurol. & Psychiat. 4: 529 (Nov.) 1920.

large percentage of the cerebrospinal fluid in order to increase the penetration of intravenous arsphenamin into the nerve structure, is advocated by Gilpin and Early [6] and Dercum.[7]

All of these methods have the object of bringing the drug into close relation with the central nervous system, and of overcoming the resistance offered by the various filtering devices of the body. In my experience, and in that of probably the majority of contributors to the literature of the treatment of neurosyphilis, there is a group of cases which show no results from a mild or intensive systemic treatment, but which do react quite well to one or another of these special methods. There are a certain number of men who feel that nothing is to be gained by such methods, and who, therefore, oppose it. Most notable among these is probably the Mount Sinai group of neurologists, including Sachs,[8] and Kaliski and Strauss.[9]

My point of view is based on an experience with cases that have been treated rather intensively by the systemic route for periods of months or years without satisfactory results, and then have showed good results when another technic was used. There seems to be no question that from the serologic standpoint, at least, more satisfactory results can be obtained by these methods. The serologic check has the advantage of being more objective than the clinical or symptomatologic evidence. The group of cases that seem to react more satisfactorily to the subarachnoid or ventricular injections than to the systemic methods include cases of meningovascular syphilis, tabes and general paralysis. There are many cases of so-called asymptomatic neurosyphilis,[10] that is, patients free from definite symptoms but with positive spinal fluid reactions, whose serologic findings are not improved by months and years of systemic treatment, only to be successfully cleared up by these other methods.

Case 8.—Mr. A. K. came under attention in October, 1917, because of insomnia. There were no physical findings suggestive of syphilis, but the blood was positive, as was also the spinal fluid. There were 77 cells per cubic millimeter, increased globulin and albumin, and a general paralytic gold curve. During the next two and a half years, he received fifty-seven intravenous injections of arsphenamin, with an average dose of 0.3 gm., mercury intramuscularly, and iodid by mouth. There was no improvement in the spinal fluid findings, nor did the symptoms improve. He was then given four intraspinal injections of arsphenaminized serum. After the first injection, there was marked improvement in the insomnia, and after the four injections, the spinal fluid became entirely negative.

In some experiments reported at the last session of the American Medical Association, my collaborators and I [11] attempted to show that the serum injected into the subarachnoid space does not travel far from the point of introduction. During the last year, more evidence of this has been obtained. It therefore seems rational to attempt to put the serum as near to the point of activity as possible. In cases of lumbar tabes and spinal syphilis, introduction into the lower spinal subarachnoid space seems reasonable. However, in cases of cerebral involvement, the serum should be introduced higher up. When the lesion is at the base of the brain, the route of election would seem to be the cisterna magna.

Case 9.—Mrs. G. M., because of failing vision, reported to a local hospital. An examination showed optic atrophy, Argyll Robertson pupils, and absent knee jerks and ankle jerks. In a period of two years, 1920-1922, she received fifty-eight injections of arsphenamin and forty-two intramuscular injections of mercury. The vision continued to fail, and in April, 1922, she came under our observation. The blood Wassermann reaction was positive; the spinal fluid Wassermann reaction was positive with 0.5 c.c. There were 26 cells per cubic millimeter; globulin and albumin were increased, and there was a syphilitic gold curve. After two cistern injections and two spinal drainages, the spinal fluid became negative and has continued to be negative under treatment for more than a year. The Wassermann reaction in the blood, which remained positive despite the two years of systemic treatment, became negative shortly after the subarachnoid treatment

In other cases of cerebral involvement, this route, or the ventricular route, is indicated.

Case 10.—Mr. A. G. had his primary infection in 1901. He was given the usual mercurial treatments of that time by one of our most noted syphilologists. Everything went well. In 1916, desiring to get married, he had a Wassermann test performed on his blood serum, which was negative. A year later, in 1917, he began to have symptoms suggestive of neurosyphilis—chills, sweats and tremors. He was given intravenous injections of arsphenamin and mercury, but he continued to grow worse. By November, 1919, he had a full-blown picture of the tabetic type of general paralysis. He was confused, his memory was poor, he was unable to care for himself, and his knee jerks and ankle jerks were absent. At this time the blood and spinal fluid reactions were strongly positive. He received some intravenous arsphenamin and several intraspinal injections, but failed rapidly. In the middle of December, 1919, he was trephined and given an injection of arsphenaminized serum. The ventricular fluid at this time was essentially negative, although the spinal fluid was strongly positive. Following the first intraventricular injection, he became excited and difficult to control. However, this treatment was continued, and improvement began. Interestingly enough, coincident with improvement, the ventricular fluid became positive. Improvement continued and the spinal fluid became almost negative, and for three years the patient has been employed by a municipality as a civil engineer.

DOSAGE

In attempting to secure the best results, the dosage and the frequency of treatment must, of course, play a large rôle. No standardization is possible. Reference has already been made to the fact that many cases of visceral or skin syphilis require long and intensive treatment, whereas others react entirely well to a relatively small amount. The same principle unquestionably holds for the treatment of nervous system cases by intrathecal methods. Some cases which apparently are not helped by these methods, when treatment is given at infrequent intervals such as once in two, three or four weeks, react better when treatment is given at much shorter intervals. Further, it often takes many months of treatment to obtain the results desired. The only way to determine the type of treatment or the amount necessary is by trial.

6. Gilpin, S. F., and Earley, T. B.: Drainage of Cerebrospinal Fluid as a Factor in the Treatment of Nervous Syphilis, J. A. M. A. **66**: 260-262 (Jan. 22) 1916.

7. Dercum, F. X.: Functions of the Cerebrospinal Fluid with Especial Cosideration of Spinal Drainage and of Intraspinal Injections of Arsphenaminized Serum, Arch. Neurol. & Psychiat. **3**: 230 (March) 1920.

8. Sachs, Bernard: Truth About Intraspinal Injections in Treatment of Syphilis of Nervous System, J. A. M. A. **69**: 681-683 (Sept. 1) 1917; On the Intravenous, Not the Intraspinal, Use of Arsphenamin in Syphilis of the Nervous System, Arch. Neurol. & Psychiat. **1**: 277-284 (March) 1919.

9. Kaliski, D. J., and Strauss, Isadore: The Significance of Biologic Reactions in Syphilis of the Central Nervous System, with Notes on Treatment, Especially Intraspinal, Arch. Neurol. & Psychiat. **7**: 98-114 (Jan.) 1922.

10. Keidel, A., and Moore, J. E.: Studies in Asymptomatic Neurosyphilis, Arch. Neurol. & Psychiat. **6**: 286 (Sept.) 1921.

11. Solomon, H. C.; Thompson, L. J., and Pfeiffer, H. M.: Circulation of Phenolsulphonephthalein in the Cerebrospinal System, J. A. M. A. **79**: 1014 (Sept. 23) 1922.

Despite the most active and prolonged treatment that we have attempted, there remains a fairly large group of cases that do not respond to our therapeutic endeavors. Thus, we have patients who have received arsphenamin intravenously twice a week for a period of many months, along with intraspinal, intracisternal and intraventricular injections of arsphenaminized serum and spinal drainage, given in rotation twice a week for months and then a little less frequently for a period of one or two years, without any favorable results. A number of cases of tabes have received long continued intravenous and intraspinal treatment without obtaining the desired effect, either clinically or serologically; from the serologic standpoint, the same is true of quite a number of cases of asymptomatic neurosyphilis.

CASE 11.—P. McG. came under our care in 1919, complaining of severe girdle pains, and pains in his legs. There were ataxia, Romberg's sign, and the absence of knee jerks and ankle jerks. He gave a history of syphilis acquired in 1898. The clinical picture was that of tabes. The blood and spinal fluid showed a positive Wassermann reaction; there were 134 cells per cubic millimeter and a general paralytic gold curve. Since that time, the patient has received 103 injections of arsphenamin, 0.3 gm. dosage, twelve intraspinal injections of arsphenaminized serum, four cistern injections and thirty-four spinal drainages, as well as mercury and the iodids. Despite this large amount of treatment, the Wassermann reaction in the blood has not become consistently negative. The spinal fluid Wassermann reaction is still strongly positive, but cell count and globulin, albumin and colloidal gold tests have become negative. We have not been able to produce a completely satisfactory serologic result or adequate clinical improvement. This is in contrast to most cases of tabes.

The foregoing portrayal leads us to conclude that in the specific treatment of cases of neurosyphilis there are some cases that do well with very mild systemic treatment, others that require more intensive systemic treatment, still others that need some form of intrathecal therapy, while there still remains a group which are resistant to any form or any combination of arsphenamin, mercury, the iodids or serum that has yet been tried by us. Cases may thus be considered according to their reaction to treatment. Such a division does not follow absolutely the older concept of parasyphilis as distinguished from tertiary syphilis of the nervous system. It is found that some cases which, from the clinical and serologic standpoint, would fall in the group of parasyphilis, namely, tabes and paresis, react quite well to antisyphilitic treatment, whereas, on the contrary, cases of meningovascular syphilis falling in the group of the tertiary variety could not be satisfactorily modified.

It still remains true, however, that general paralytic and tabetic patients are, on the whole, more unsatisfactory in their reaction to treatment than the simple meningeal cases.

We are therefore forced to accept the point of view that there are certain definite limitations of our present therapeutic agents. That this is rather generally accepted for systemic syphilis as well as neurosyphilis is shown by the amount of work in process in attempting to find more satisfactory drugs. Thus, constant attempts are being made to produce new chemicals for the treatment of syphilis, as, for instance, silver arsphenamin, sulpharsphenamin, bismuth compounds, new varieties of mercurials, and tryparsamid. Very favorable results have been reported by Lorenz and others in the treatment of neurosyphilis by the drug tryparsamid. This drug, which is an arsenic derivative, is said by Voegtlin [12] to have a much greater power of permeating the nervous tissue than has arsphenamin, neoarsphenamin or silver arsphenamin.

IMMUNITY OF PATIENT

The foregoing account deals entirely with the treatment of neurosyphilis by antisyphilitic medication. It is essential to consider at the same time the reaction of the patient himself to the disease. The general immunity reactions have been briefly mentioned. These probably play an important part. Those patients who have a high resistance or the power of producing immune bodies are the ones who can be helped the most. It is therefore necessary to strive constantly to improve the patient's general condition in the hopes of increasing his bodily defense. General hygiene is an essential factor in the treatment of all cases of syphilis, and especially of neurosyphilis. Improvement in nutrition, fresh air, massage and hydrotherapy are important adjuvants and are usually insufficiently considered. The removal of all excessive stresses and strains, either physical or mental, is likewise important.

In the attempt to raise the resistance or induce immunity, a number of methods have been instituted. This is the so-called nonspecific therapy. For many years the Germans, especially, have tried a number of devices along the line of nonspecific protein therapy, most of them designed to cause a hyperleukocytosis. Tuberculin, typhoid vaccine, sodium nucleinate and a number of other similar substances have been used for this purpose.

More recently, patients with general paralysis have been inoculated with relapsing fever or malaria in order to produce a general bodily reaction in the form of chills, fever and leukocytosis. The reports of malarial therapy particularly have been most optimistic. Whatever the final conclusion for this type of therapy may be, the attempt emphasizes the desire to improve on our usual methods and to take into account the need of the patient's own immunity reactions.

This all shows that we are not satisfied with our treatment of neurosyphilis, and that we have not reached a static situation, but that continued efforts are indicated and are being made for the improvement in our methods of procedure. The chemist, the pharmacologist, the immunologist, the clinical syphilologist and the neurologist must all work together for the improvement of drugs and methods of administration and general care of the patient, in order that the future may duplicate the advances of the recent past.

SUMMARY

The problem of the treatment of neurosyphilis is to destroy the spirochetes that are present in the nervous system. The nervous tissue is walled off from the general body structures, and this leads to a relative impermeability of drugs placed in the general circulation. However, some penetration takes place, the amount apparently varying in different individuals. There is a group of neurosyphilitic cases that react well to mild systemic treatment. Others require more intensive systemic treatment. There are many, however, that are not improved to any extent by systemic treatment with arsphenamin, mercury or iodid. Some of these cases do well, however, when medicaments are

12. Voegtlin, Carl; Smith, M. I., and Dyer, Helen: Penetration of Arsenic Into the Cerebrospinal Fluid, with Particular Reference to the Treatment of Protozoal Infections of the Central Nervous System, Pub. Health Rep. **38**: 1003 (May 11) 1923.

given directly into the cerebrospinal fluid or when spinal drainage is used. Theoretically and practically, it seems advisable to place the medicament as near to the site of pathologic change as possible, utilizing the lumbar subarachnoid space, the region of the cisterna magna and the ventricles as conditions indicate.

No definite rules can be laid down as to which type of treatment will produce the best results in a given case. A classification based on the reaction to treatment does not coincide with the older ideas of tertiary syphilis of the nervous system as contrasted with parasyphilis, because some cases of tabes and paresis react quite well to relatively mild systemic treatment, whereas some cases of the meningovascular group do poorly on the same type of therapy. It is more difficult, on the whole, to get satisfactory results in cases of tabes and general paralysis than in the meningovascular type, and the former usually require quite intensive treatment, making use of the cerebrospinal fluid pathway. There still remains a group of cases that cannot be satisfactorily modified by treatment with arsphenamin, mercury, the iodids and blood serum.

The immunity of the patient plays a large rôle in the results obtained, and various procedures that may increase the immunity responses have a place in the treatment of neurosyphilis. Of great importance are all hygienic procedures that improve the general condition of the patient. Some favorable reports have been made from inducing febrile reactions by inoculations with malaria and relapsing fever. The hope for the future rests either in the method of inducing greater immunity on the part of the patient or in developing drugs with greater power of permeation into the nervous tissue.

THE PHARMACOLOGY OF MERCURY

A REVIEW OF SOME LITERATURE *

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The most ancient of present-day therapeutic procedures is probably the use of mercury against syphilis. In 2637 B. C., the Chinese Emperor Hoang-Ty collected the medical literature of his day, and in these books the use of mercury by friction for a disease, which it is not difficult to believe was syphilis, is described as even then a procedure of some antiquity. Hippocrates did not mention it, but his pupil Aristotle knew of it and anticipated "protoplasmic poison" when he said it killed all living things. It was used by the Arabs, perhaps from the Chinese through the Hindus, as an ointment in skin diseases during the first thousand years of the Christian Era. An Arabian physician, Avicenna, in 1000 A. D., was using it continually, principally for its laxative action. Hugh of Lucca and his pupil Theodoric used it internally as well as externally in the thirteenth century, but its use by physicians generally was prevented by the survival of the galenic prejudice against drugs of mineral origin.

However, when the great epidemic of syphilis swept over Europe, at the end of the fifteenth and during the early years of the sixteenth centuries, the great rebel, Paracelsus, Fracastor and others succeeded in routing this prejudice, and its use became general in the scourge. No less distinguished a victim than Francis the First was said to have been cured by its use; but in spite of its firm establishment at this time, it has continued until now to be the subject of violent medical controversies. It has been dropped from use and lauded to the skies as a universal panacea. The famous Dr. Dover, who rescued Alexander Selkirk from the Isle of Juan Fernandez, wrote so ably in its behalf that it became the fashion for all the ladies of London of his day to take courses of mercury. In order to demonstrate to his critics its utter innocuousness, he had a certain patient take two pounds at a single dose.

The use of mercury for many diseases other than syphilis became so general and so poorly supervised during the eighteenth century that calomel became a household drug, and the "mercurial disease," with all the symptoms of chronic poisoning, appeared and became the subject of considerable writing. Dr. Chisholm,[1] and his colleague, Dr. Rusk, in America, wrote enthusiastically of its value in yellow fever and other tropical diseases during the early part of the nineteenth century. After some reaction, traceable to its misuse, Ricord, Hebra and others placed it once more on a firm basis. In 1892 another advance in its use was marked by the introduction of the injection of mercury by Baccelli. The discovery of arsphenamin by Ehrlich threatened once more to remove it from the pharmacopeia, but its use has persisted. At present, the most interesting work is being done in connection with synthetic mercury compounds, which are intended to take advantage of the beneficial while avoiding the toxic effects. This work, while very new, has already produced mercurophen, mercurochrome-220 soluble and flumerin, and more and better drugs in the near future are promised.

The pharmacology of mercury is still in an unsatisfactory state. The mechanism of its action is not understood. Its use is still on an empiric basis. The fundamental facts as to its absorption, circulation and excretion are not agreed on. This is due to the lack of accurate methods for its quantitative determination. Collins, working under Hanzlik, reviewed this phase of the question, but found no method entirely satisfactory for the very small amounts that are involved. Lomholt,[2] however, has recently described an electrolytic method, which, in his hands, seemed to give sufficiently accurate results. In addition to this difficulty, there are often encountered unexplained variations between individual animals and patients in the way in which they react to mercury. Similar variations have often been encountered clinically.

While the use of mercury in syphilis has the sanction of the greatest antiquity and the soundest clinical observation, no better explanation for its action can be offered now than that offered by Fracastor in 1530, when he said:

> The action on the scourge is marvelous, either because its natural affinity for heat and cold renders it proper to absorb the devastating fire of the disease, or because its surprising density permits it to dissolve and divide the humors, or that its mobile and penetrating molecules, apt to infiltrate themselves

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* Read before the joint meeting of the Section on Pharmacology and Therapeutics and the Section on Dermatology and Syphilology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

1. Chisholm: Fevers.
2. Lomholt, S.: Circulation of Mercury in the Body, Arch. f. Dermat. u. Syph. **19**: 126, 1918; Absorption and Elimination of Mercury in the Different Methods Used in Treatment of Syphilis, Brit. J. Dermat. **32**: 353 (Dec.) 1920.

in the ways of the tissues, have power of pursuing and consuming the impure yeasts of the disease, or finally that its magic virtues are derived from some occult force whose mystery escapes us.

Modern authorities suggest that it stimulates antibody formation, that it breaks down scar tissue and renders the spirochetes accessible, and that it acts directly as a trypanosomicidal agent. In respect to this last, Lomholt maintains that spirochetes grow readily in serum which contains a considerably higher concentration of mercury than that ever attained in the blood of a treated patient. It is apparent from his work and the work of others that mercury is not spirocheticidal in the body in the sense, or at least to the degree, that arsphenamin may be said to be. How its beneficial results are achieved is not known.

ABSORPTION

Mercury is absorbed from all surfaces, from the skin, the alimentary tract, the lungs, the rectum, the vagina, the surfaces of wounds, and from subcutaneous, subdural, intramuscular and intravenous injections. Its characteristic effects have been demonstrated after administration by all these routes. Metallic mercury organic compounds, and mercuric and mercurous salts have all been used successfully. It is usually stated that the action depends on the mercury ion, and that the various salts are active to the degree in which they can be converted into this form. Certainly, the mercuric salts exhibit the typical mercury actions sooner and in smaller dosage than do the others. The absorption from the gastro-intestinal tract is uncertain, and quantitative experiments on it have been few. Metallic mercury and mercuric sulphid are very slightly absorbed when given by mouth. A small proportion of calomel given for its laxative, diuretic or antisyphilitic action is absorbed, the greater part being swept out. The soluble salts, such as mercuric chlorid, which can form an albuminate with the mucous membrane of the intestinal tract, are almost completely absorbed. Surprisingly complete absorption of calomel sometimes occurs, giving rise to unexpected poisoning, but this is rare. Fistula experiments seem to show that most of the absorption takes place in the ileum, but mercurialism has been produced by rectal administration.

Through the Lungs.—Workers exposed to metallic mercury have been poisoned by inhaling the fumes; 200 of the sailors on the British ship *Triumph* were poisoned in 1810, and three of them died, when casks of mercury broke in the hold and the fumes penetrated the forecastle. Mercury can be shown in the urine of men and dogs two hours after they have been exposed to its fumes. It has been suggested that it is absorbed from the alveolar air, by virtue of its gaseous tension; but the explanation that it is deposited on the mucous membrane of the bronchi seems more plausible, especially in view of the marked irritation of this membrane which takes place when mercury is administered in this way. The uncertainty of the dosage, the bronchial irritation and the danger of poisoning have properly made this method of administering mercury obsolete. What rôle, if any, pulmonary absorption plays when mercury is given by inunction has been the subject of much discussion. Wellander and others have asserted that it plays the major rôle. But the recent work of Jenkins[3] in England, and of Schamberg[4] and others in this country, should terminate this discussion, because they showed that the greater absorption is through the skin, and not through the lungs.

From Wounds.—Absorption from the surfaces of wounds occurs with great facility when those salts capable of forming albuminates are used. This is possibly of some importance in the treatment of extensive syphilitic ulcerations.

Through the Skin.—This occurs even when the surface is intact, probably by way of the hair follicles and ducts of the sweat glands. Metallic mercury in an oily vehicle is the drug usually used. Schamberg states that calomel, if used in sufficient dosage, is just as effective and much cleaner. Cole[5] has denied that it is absorbed to any appreciable extent. It is likely that the mercury is oxidized as it passes through the skin, but it is possible that it is picked up by the leukocytes as metallic mercury. Only a small part of the mercury that is rubbed on the skin is absorbed, and, according to Cole, just as much if the excess ointment is washed off with soap and water after rubbing for a half hour as if it is left on, as is the general practice. Soap has been used as a base for the mercury ointment. Absorption after inunction, as judged by the appearance time in the urine, is fairly prompt; and, judged by the amount excreted, which will be discussed later, amounts comparable to those given by injection can be introduced by inunction.

After Injection.—Injection is becoming the most popular method for mercury administration, and much work has been done on the quantitative absorption after it is given in this way. The speed of absorption, the percentage absorbed and the locally irritating effects depend on the form used, on the vehicle with which it is given and, to some extent, on the concentration of the salt. Lomholt investigated the absorption directly by injecting known amounts of various preparations into dogs and subsequently analyzing the sites of injection at varying intervals to determine the quantity left in situ, and, by the difference, the amount absorbed. With soluble salts, using the benzoate, he showed almost complete absorption in fourteen days, but with half left unabsorbed in seven days. With salicylate, the absorption was more rapid, four fifths being absorbed in four days, and all of it in ten days. The absorption of calomel was very much slower, less than one half being absorbed in ten days. Mercurial (gray) oil was very slowly absorbed, less than one third being absorbed in three weeks. In the case of salicylate, Lomholt found that the absorption was a good deal more rapid and complete when a vegetable or animal oil was used instead of the more commonly employed liquid petrolatum. Cole, Littmann and Sollmann,[6] following the absorption of the insoluble salts with the roentgen ray, arrived at similar conclusions as to the relative speed of absorption of salicylate, mercurial oil and calomel.

3. Jenkins, C. E.: Some Experiments in the Volatilization and Absorption of Mercury, Brit. J. Dermat. **33**: 135 (April) 1921.

4. Schamberg, J. F., and Kolmer, J. A.: The Germicidal Activity of Calomel, J. A. M. A. **62**: 1950 (June 20) 1914. Schamberg, J. F.; Kolmer, J. A., and Raiziss, G. W.: A New and Superior Mercurial Germicide, J. A. M. A. **68**: 1458 (May 19) 1917. Schamberg, J. F.; Kolmer, J. A.; Raiziss, G. W., and First: Sodium Oxy-Mercury-Ortho-Nitrophenolate, J. Infect. Dis. **24**: 547 (June) 1919.

5. Cole, H. N., and Littmann, Sidney: A Clinical Study on Calomel Inunctions in Syphilis, J. A. M. A. **73**: 1409 (Nov. 8) 1919. Cole, H. N.; Gericke, A. J., and Sollmann, Torald: The Clean Inunction Treatment of Syphilis with Mercury, J. A. M. A. **77**: 2022 (Dec. 24) 1921. Cole, Driver and Hutton: Mercurosal in Treatment of Syphilis. Cole, H. N.; Gericke, A. J., and Sollmann, Torald: Treatment of Syphilis by Mercury Inhalations, Arch. Dermat. & Syph. **5**: 18 (Jan.) 1922. Cole, H. N., and Littmann, S.: A Clinical Study of the Use of Calomel Inunctions in Syphilis, J. A. M. A. **73**: 1409 (Nov. 8) 1919.

6. Cole, H. N.; Littmann, Sydney; and Sollmann, Torald: A Study of Mercury Injections by Means of the Roentgen Ray, J. A. M. A. **75**: 1559 (Dec. 4) 1920.

The absorption, after intravenous administration, is, of course, practically immediate. Usually soluble salts are used in this way, but certain colloidal salts have been recommended. Dr. Hanzlik [7] has shown that these are not devoid of danger. Metallic mercury itself in a fine colloidal state has been exploited by interested manufacturers as a possible drug for intravenous use without, however, sufficient proof as to the safety of the method.

DISTRIBUTION AFTER ABSORPTION

The form in which mercury circulates and its distribution after absorption have been the subjects of a great deal of speculation and some experiment. Most workers affirm that it circulates as an albuminate, an organic compound, which is formed when mercuric ions are brought in contact with proteins or protoplasm. There are those who think that metallic mercury is carried by leukocytes, mechanically, so to speak. It seems more likely that it is oxidized at the site of administration. In the blood, mercury is present, according to Lomholt's experiments, both in the plasma and in the corpuscles, and in about equal amounts in each. There is some evidence that certain mercury compounds, the salicylates particularly, are not completely broken down; that mercury given in this form does not exert to the fullest extent the action of the mercury ion, but that the drug circulates and is excreted as the salicylate. This may apply to other un-ionized organic compounds.

The distribution of mercury in the body has been studied after fatal poisoning, and in a few cases in which death has occurred while a patient was taking treatment. There is an agreement in general between these two methods in the matter of the relative amounts the various organs contain. In treated cases, Lomholt found a maximum of 3 mg. per liter in the blood. Rosenbloom,[8] in a poisoned patient, found 12 mg. per liter. The bile shows relatively high concentrations, i. e., 7.5 to 16.5 mg. per liter.[2] Traces are often found in the spinal fluid of treated cases (0.04 mg. per liter). According to Lomholt, the kidneys contain the highest concentration, namely, 1.6 mg. per hundred grams of substance in a treated case, and 17 mg. per hundred grams in a poisoned patient. (Rosenbloom found 2.8 mg. per hundred grams in his case.) The liver was next in percentage content and first in actual content among the internal organs. The walls of the bowel contain the next highest amount in point of percentage. The muscles form the reservoir for the great bulk of the retained mercury, but the percentage content here is not high.

In the early part of the treatment, there is usually more mercury absorbed than is excreted. Then there comes a time when excretion becomes about equal to absorption. This is thought to occur when a certain saturation point is reached. Precisely what this saturation point is is not known, although it is a matter of some considerable interest. On the basis of careful estimations, Lomholt figures that the tissues will hold from 90 to 120 mg. without showing toxic signs. Rosenbloom found a total of 175 mg. in the body of a fatally poisoned person.

The biochemistry of mercury appears to be about as follows: After absorption, the metallic forms and the mercurous forms are oxidized to the mercuric form, and an albuminate is formed. A portion of this is left in every tissue of the body. A larger portion is caught in the kidney, and excretion is immediately begun, while a still larger portion is fixed by the cells of the liver. This portion is excreted into the bowel through the bile, and a part of it escapes with the stool, but another part is reabsorbed and goes through the same cycle. As this process goes on, the saturation point of the tissues is approached and, as it is approached, the excretion rises. However, there is a limit to the maximum amount that can be excreted by all available routes in one day, and when in a saturated individual more is given than can be excreted by all available routes in one day, various symptoms of poisoning appear. It would perhaps be ideal to reach the saturation point and then so grade the dose as to keep absorption and excretion equal. Unfortunately, this is not possible at present.

There are really three forms of mercurial poisoning. The very acute form is due to the local precipitation of tissue proteins by the mercuric ion. The chronic form is due to the tolerated saturation point being exceeded. The indirect poisoning is dependent on injury to the kidney. The local action is one of corrosion, and is exhibited principally in the gastritis and enteritis of persons poisoned by mercuric chlorid. The injuries may be sufficient to cause acute death, but, if the first short period is survived, death rarely occurs from this cause. The chronic form is seen typically in the salivated patient, though there are changes in many organs as well as the usual salivation. The local process may go on to necrosis of the jaws. The mechanism of this necrosis has been fully reviewed by Bessesen.[9] The salivation is probably not in all cases an index that the saturation point in other organs has been reached, since there is reason to believe that it depends to a considerable extent on the condition of the teeth locally. Caries, etc., favor its early appearance. It is not, therefore, always proof that a patient has been thoroughly treated.

The microscopic changes produced in all organs by mercury have been carefully studied by Kolmer and Lucke [10] and by Raiziss, Kolmer and Gavron.[11] The changes in the brain consist of perivascular, round cell infiltrations, which have always been associated with syphilitic changes. Salant [12] has investigated the pharmacologically toxic actions and has shown marked depressant effects of mercury on the heart, causing irregularities and drop in blood pressure when mercury is given in fairly large doses intravenously (I believe). This effect can be fatal. It may be a factor in the early deaths from acute poisoning. The principal anatomic changes caused by mercury are the changes in the kidneys, in which destruction of the convoluted tubules takes place. Some damage was demonstrated by extremely small doses by Menten,[13] even as little

7. Hanzlik: Personal communication to the author.

8. Rosenbloom: Distribution of Mercury in Body in a Case of Acute Poisoning by Bichloride of Mercury, J. Biol. Chem. **20**: 123, 1915.

9. Bessesen, D. H.: Pathogenesis of Mercurial Stomatitis, Arch. Dermat. & Syph. **7**: 332 (March) 1923.

10. Kolmer, J. A., and Lucke, B.: A Study of the Histologic Changes Produced Experimentally in Rabbits by the Mercurial Compounds, Arch. Dermat. & Syph. **3**: 531 (April, Pt. 2) 1921.

11. Raiziss, G. W.; Kolmer, J. A., and Gavron, J. L.: Chemotherapeutic Studies on Organic Compounds Containing Mercury and Arsenic, J. Biol. Chem. **40**: 533 (Dec.) 1919. Kolmer, J. A., and Mastin, E. V.: Globules of Metallic Mercury in the Tissues, J. A. M. A. **70**: 1290 (May 4) 1918. Schamberg, J. F.; Kolmer, J. A., and Raiziss, G. W.: Chemotherapy of Mercurial Compounds, Am. J. Syphilis **1**: 1 (Jan.) 1917; A Study of Comparative Toxicity of Various Preparations of Mercury, J. Cutan. Dis. **33**: 819-840, 1915; Experimental Study of Mode of Absorption of Mercury When Applied to the Skin, J. A. M. A. **70**: 142 (Jan. 19) 1918.

12. Salant, W.: Pharmacology of Mercury, J. A. M. A. **79**: 2071 (Dec. 16) 1922.

13. Menten, M. L.: Pathological Lesions Produced in Kidney by Small Doses of Mercuric Chloride, J. M. Res. **43**: 315 (June-July) 1922.

as 0.01 mg. per kilogram producing demonstrable changes in the kidney and liver. MacNider [14] investigated the toxic effects from a functional point of view. He showed that acidosis accompanied the kidney destruction. He also pointed out that animals whose kidneys were already damaged reacted much more severely to mercurial poisoning than those with healthy kidneys.

A great deal has been written about the treatment of mercuric chlorid poisoning. This cannot be considered in detail here. Sansom showed that if in dogs a dose of 4 mg. per kilogram was absorbed, none of the recommended antidotal treatments were of any avail. The success of all treatments probably depends more on preventing absorption of mercury and removing it from the alimentary tract than on any direct antidotal action that may be achieved after the mercury is absorbed. This is accomplished by precipitation of the mercury in the stomach by albuminous materials or by chemical agents designed to form the insoluble sulphid, with subsequent removal by catharsis and lavage.

EXCRETION

Mercury is excreted mainly by the kidneys and the bowel. Trivial amounts are excreted by the sweat glands. The proportion between the amounts excreted in the urine and in the feces varies, the averages being about 55 and 45 per cent., respectively. Nothing is known as to the form in which mercury is excreted. It seems probable that the inactive sulphid is formed in the bowel, and that the mercuric sulphid is excreted as such, in part, at least; but this is not certain. There is usually a diuresis accompanying the excretion of mercury, but it is not in proportion to the amount contained in the urine. This is made use of in cases of cardiac dropsy. Excretion parallels absorption to a certain degree, but while there is no limit to the amount that may be absorbed, there is a distinct maximum limit for excretion. The limit for the kidneys, without serious damage to these organs, seems to be up to about 9 mg. daily.[2] The maximum excretion does not appear as soon as the mercury is absorbed. The curve rises to a plateau during the first few weeks of treatment. Excretion begins, however, very soon after the mercury is administered, especially after the salicylate and the soluble salts, mercury often appearing in the urine within two hours after an injection. With calomel and mercurial oil, the time of appearance and the attainment of the maximum are both delayed, as might be expected from their slow absorption.

Mercury is sometimes found in the urine long after mercury medication has been discontinued. This is seen after all methods of administration, indicating the gradual excretion of the residual mercury, but it is most marked after the use of mercurial oil, mercury having been found in the urine a year after the last dose. As to the actual daily amounts found, there is a fairly good agreement. These usually run from 1 mg. to 3 mg. daily in the urine, with the usual methods of treatment.

Next to the kidneys in importance as an avenue for mercury excretion is the bowel. Whether all the mercury comes into the bowel through the bile, or whether part is excreted directly through the bowel wall, is doubtful. Probably both channels are utilized. The daily excretion in the bowel is fairly constant, except when the drug is given by mouth. It does not vary much with variations in the quantity of feces.

Generally speaking, the excretion, both by the kidneys and by the bowel, follows the absorption. There is a gradually increasing amount excreted for a time; then the daily excretion becomes constant. There is a distinct maximum to the amount that can be excreted daily without marked damage to the kidneys. There is some evidence that even the most minute amounts cause some slight injury. Kidneys already diseased are far more susceptible to injury than are normal kidneys.

Holdewizn stated, in 1910, that mercury is not excreted in cow's milk; but Legales and Duperoy,[15] in 1900, stated that it could be found in the milk of women who were being treated with mercury, and in amounts sufficient to be of importance in the treatment of congenital syphilis.

THERAPEUTICS OF MERCURY

While a study of the pharmacology of mercury clears up certain propositions, it does not furnish the definite guides for therapeutic usage that one might desire. Mercury finds its principal use in the treatment of syphilis. Next in importance are the laxative and diuretic actions of calomel. Formerly, mercury was much used in the treatment of many other diseases, especially yellow fever and other tropical diseases. Recently, Vecki [16] and others have again recommended it for influenza and other acute conditions. In view of the favorable results that were formerly obtained by it in these diseases, it may be possible that the modern therapeutist is overlooking something in the comparative neglect into which mercury has fallen for diseases other than syphilis.

Although the mechanism of action is not known, certain facts are known about certain forms of mercury and about methods of administration that are important additions to the empiric lore of mercury. Administration by mouth, as judged by excretion curves, etc., is an uncertain method. Usually very little is absorbed with most of the preparations used. In order to reach really effective dosage by the oral route, the patient is exposed to the sudden and inexplicable absorption with subsequent poisoning, which sometimes occurs. Inunction provides a steady and fairly reliable, although somewhat slow, method of administering mercury. The excretion curve often is slow to rise, but can be kept fairly constant from day to day when a level is reached. Absorption can be quickly stopped when the first symptoms of mercurialism appear.

Treatment by intramuscular injection is, of course, more accurate and reliable, but the choice of the preparation to be used is of the utmost importance. The use of calomel and mercurial oil injections seems illogical and dangerous. The depots established by the lack of absorption of these drugs may, it is true, be a long continued source of mercury; but they constitute both a theoretical and a real danger by reason of sudden massive absorption, which may take place under trauma, etc. Cole reports that seventy-eight out of 108 fatalities due to mercury administration since 1883 were due

14. MacNider, W. D.: Study of Acute Mercuric Chloride Intoxication in Day, Reference to Kidney Injury, J. Exper. Med. **27**: 519 (April) 1918; The Susceptibility of Naturally Nephropathic Animals to Acute Mercuric Chlorid Intoxication, J. M. Res. **39**: 461 (March) 1919; Elimination of Phenolsulphonephthalein in Acute Mercuric Chloride Intoxication, Proc. Soc. Exper. Biol. & Med. **18**: 73, 1920.

15. Legales and Duperoy: Sur l'elimination du mercure par la glande mammaire, Tr. XIII Internat. Cong. Med., Paris, 1900, p. 393.

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to insoluble drugs, thirty-one of the fatalities being due to mercurial oil. Salicylate is quickly absorbed and is excreted with great rapidity, and probably a large part of it is never broken down to give mercury action. This drug appears to be only a feeble mercurial. The soluble salts are quickly absorbed and easily controlled, but painful when given by intramuscular injection.

Intravenous administration suggests itself as a method of eliminating some of the objections to the other methods. However, it presents some danger perhaps from embolism, although many thousands of injections of the cyanid are reported to have been given in the French army without serious accidents. The mercuric salts are very prone to obliterate the vein used for injection. Nixon [17] has suggested that this can be avoided by withdrawing blood into the syringe in which the mercuric chlorid solution is contained, causing thereby a precipitation of the albuminate, which, being soluble in an excess of serum, is redissolved when more blood is withdrawn and mixed with it. Then the whole amount may be injected without causing any obliteration of the vein.

Various protected colloidal compounds have also been recommended for intravenous use. However, Dr. Hanzlik [7] has expressed himself as not being convinced that the claims of their proponents for utter innocuousness and high effectiveness are altogether justified. Colloidal metallic mercury itself has been recommended for intravenous use. There would seem to be some dangers attached to it from possible embolism, etc.

CHEMOTHERAPY OF MERCURIAL COMPOUNDS

The most interesting recent work with mercury has had to do with the development of new synthetic compounds, designed to reduce the toxicity and preserve the desired effect, in the manner in which arsphenamin was brought out. This work has already resulted in the production of a number of useful drugs, among which may be mentioned mercurophen, mercurochrome-220 soluble and flumerin. The method used by Hill and Young [18] in testing these new mercurials, and incidentally all the old compounds, is a highly commendable one, and more drugs should be subjected to it. It consists in determining the amount and dosage of a drug that is necessary to render the regional lymph nodes in a syphilitic rabbit noninfectious, and is correlated with observations on the course of the testicular lesions that are produced experimentally. It is possible that the next great advances will be along the lines of these synthetics.

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EFFECTS OF TREATMENT ON BONE LESIONS IN CONGENITAL SYPHILIS *

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The most common and characteristic bone change found in the syphilitic fetus and in the new-born infant is osteochondritis syphilitica, first described by Wegner [1] in 1870. The findings of Wegner were later confirmed by Waldeyer and Köbner, Parrot, Birch-Hirschfeld and others.

The frequency with which this change is found by various observers varies from 70 per cent. (Awsitidijski) to 93.4 per cent.[2] In roentgenographic examination of 100 supposedly normal infants, Shipley [3] and his co-workers found fifteen with advanced syphilitic osteochondritis, ten with less marked signs of syphilitic involvement, and twenty-one with changes from the normal which strongly suggested syphilis.

Fig. 1 (Case 2).—Appearance of bone lesions at age of 2 months, before treatment.

Thoenes,[4] in a series of forty cases of congenital syphilis, found some signs of osteochondritis in thirty. In two of the cases there were, in addition, periosteal changes.

Osteochondritis has always been regarded as of intra-uterine origin. Taylor's contention that it might occur in very early acquired syphilis has not been accepted. It is essentially a disorder of the long bones, but it may be found in any bone having endochondral development, although in the flat bones it is rare. It is best seen in the fetus or in the infant under 3 months of age. After three months it begins to disappear, even in the absence of treatment. The ephemeral character of osteochondritis suggests that it is a secondary syphilitic process rather than a tertiary one. The lesions undergo complete healing and leave scarcely a trace. Periostitis and gummatous processes occur later in life, although Orth described a gummatous lesion in the diaphysis of a 3 months old infant, and Ahrens [5] found total necrosis in the tibia of an infant 3 weeks old. These changes are essentially tertiary in character, and are much more lasting in their effects and are much more resistant to therapy.

According to Frangenheim,[6] Wegner originally described three stages in the process of formation of

* Read before the joint meeting of the Section on Pharmacology and Therapeutics and the Section on Dermatology and Syphilology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

1. Wegner: Virchows Arch. f. path. Anat. **50**, 1870.
2. Orth: Unna's Festschrift, Dermatologische Studien **20**: 1-12, 1910.
3. Shipley, Pearson, Weech and Green: Bull. Johns Hopkins Hosp. **32**: 160 (May) 1921.
4. Thoenes: Arch. f. Kinderh. **70**: 252, 1922.
5. Ahrens: Berl. klin. Wchnschr. **47**: 2032, 1910.
6. Frangenheim: Die Krankheiten des Knochensystems im Kindesalter, Stuttgart, Enke.

osteochondritis. In the first stage the calcified zone between the epiphysis and the diaphysis becomes widened to a breadth of 2 mm. as a white or pink line. In the second stage this may become increased to 4 mm. Necrosis of the bony trabeculae occurs, owing to ingrowth of tongues of calcification. In the third stage the periosteum and the perichondrium become thickened in the epiphyseal region in a manner suggesting the findings in rickets. Separation of the epiphysis from the diaphysis, as first described by Parrot, frequently takes place along the line of necrosis, and pathologic fracture may result.

According to Shipley, the bones most commonly affected are, in the order of frequency, the lower end of the femur, the distal and proximal ends of the tibia, the distal ends of the radius and ulna, the extremities of the metacarpals, the proximal ends of the phalanges, and the proximal ends of the ulna and radius. Thoenes in the main agreed with these findings, except that in his series the distal epiphyses of the radius and ulna were more frequently involved than were the distal ends of the tibia and fibula.

Our material consists of roentgenograms of the long bones of eighteen congenital syphilitic infants. In all of these there were characteristic changes, chiefly of osteochondritis. Owing to lack of funds, we were unable to carry out more extensive roentgenographic studies. Nine of the infants had symptoms referable to bone disease, such as swelling of a joint of an arm or leg, tenderness of the shaft, pseudoparalysis of Parrot, or pain on handling.

The usual course of treatment consisted of from six to eight weekly injections of neo-arsphenamin, intravenously or intramuscularly, in doses up to 0.15 gm., followed by eight to ten weekly intramuscular injections of mercuric salicylate in oil, in doses of from one-fifth to one-third grain (0.013 to 0.02 gm.). This course was followed by a rest from treatment for from three to five weeks, and then the Wassermann test was made and the course was repeated.

The symptoms of the bone lesions decreased after the first injection of neo-arsphenamin, and usually disappeared within a month. The pseudoparalysis, when of the true Parrot type, cleared up quickly; but when complicated by rickets, the recovery of normal use of the extremities was much slower.

As the roentgen-ray findings disappear in the absence of treatment, it is difficult to determine whether or not the improvement is more rapid with treatment. To do this would require a larger series of cases than we have followed. However, the improvement both in symptoms and in roentgen-ray findings dates from the beginning of antisyphilitic treatment, whether the child is 2 months or 6 months of age.

Under the treatment given, the roentgen-ray changes show a return toward normal. The shadow at the epiphyseal line becomes broader and less intense. Trabeculae reappear and become more dense in the area of decreased density on the narrow side of the epiphyseal shadow. Thus, the irregular density at the end of the bone gradually becomes more regular, and normal bone growth continues. The periosteal changes are slower to return to normal. However, within a few weeks the narrow, clear area between the cortex and the periosteum becomes less distinct. The longitudinal striations in the thickened periosteum become decreased in intensity and, last of all, the periosteal shadow becomes narrower. The finer trabeculation of these bones sometimes persists for several months. This may be due to an associated rickets. Mild rachitic symptoms were frequent in these cases of congenital syphilis and also more resistant than in nonsyphilitic infants to the usual methods of antirachitic treatment.

Fig. 2 (Case 2).—Appearance of bone lesions at age of 4½ months, after treatment.

In older children, ranging in age from 3 to 15 years, the bone process noted is more often a periostitis with or without a definite gummatous osteitis. This is usually most prominent in the tibia, and results in deformities of the "saber tibia" type. This we consider a tertiary process, and the periostitis results in a bone sclerosis which we could not hope to modify much by antisyphilitic treatment. The symptoms, which consist of more or less definite "growing pains" or "rheumatic pains," mostly at night, and local tenderness, are promptly relieved by arsphenamin and sometimes by potassium iodid. When an active gummatous process is going on, antisyphilitic treatment can heal this process, but not to the point of producing a normal roentgen-ray picture, so far as our experience has gone.

REPORT OF CASES

The case histories here recorded serve to illustrate the symptomatology and the course of the early and later cases.

CASE 1.—P. W., a boy, aged 3 months, had had a swelling of the left leg and a maculopapular rash over the trunk since 3 weeks of age. The child was a well nourished infant with snuffles, enlarged spleen, left inguinal adenopathy and resulting edema of the left leg and scrotum. Incision was made into a fluctuating area in the left iliac region, and several ounces of staphylococcus pus was drained out, after which the inflammation and edema quickly subsided. The Wassermann reac-

tion was + + + on the infant and + on the mother. Roentgenograms showed a very distinct periostitis of the femur and tibia and a distinct line of increased density at the lower end of the tibia and fibula. The usual course of antisyphilitic treatment was given. After the first course at 7½ months, the Wassermann reaction was negative. At 9 months the roentgen ray disclosed a very slight periostitis, and the ends of the tibia and fibula were practically normal. At 1 year of age, after the second course of treatment, the Wassermann reaction was again negative, and the general condition was excellent except for mild rickets.

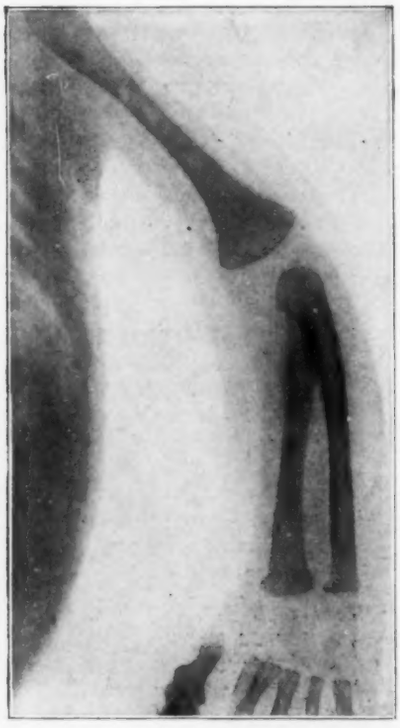

Fig. 3 (Case 3).—Appearance of bone lesions at age of 1½ months, before treatment.

CASE 2.—M. S., aged 2 months, cried when handled, and used the hands very little and the legs less than normal. Nursing was difficult on account of the snuffles. The spleen was enlarged; there was a fading pink maculopapular eruption with slight scaling on the extremities. The Wassermann reaction was + + + on the infant and on the mother. Roentgenograms showed a very marked osteochondritis and periostitis. After two weeks of antisyphilitic treatment the arms and legs were used much more freely. At 4½ months of age, the osteochondritis showed distinct changes toward normal, and the periosteal line was more definite and narrower. At 7 months, the Wassermann reaction was negative, and at 16 months was still negative after three and a half months without treatment. The general condition and development were excellent.

CASE 3.—J. T., aged 1½ months, had swelling and tenderness of the left elbow, and cried when handled, and especially at night. Examination showed snuffles, swelling and tenderness of the left elbow, with pseudoparalysis of Parrot. The other extremities were tender. On the soles of the feet there were copper colored macules, slightly papular, with fine scales in the center. The spleen and epitrochlear glands were palpable. The temperature was 101.6 F. (rectal). The Wassermann reaction was + + +; of the mother, + + +; of the father, negative. The roentgen ray showed very marked periostitis of the upper end of the radius and a line of increased density at the distal end of the radius and the ulna. Antisyphilitic treatment was started as outlined. In one week the left arm was being used more and the crying was less when the infant was handled, and in one month the left arm was being used almost as freely as the right. At 3½ months of age, the density of the lines at the epiphyseal junction was decreased. At 6 months, the Wassermann reaction was negative. At 1 year, the osteochondritic changes had disappeared and only slight periosteal thickening of the radius still persisted. At 18 months, the Wassermann reaction was still negative.

CASE 4.—M. H., aged 6 months, seemed to have pain on handling, especially if the arms and legs were handled. This had been present since 2 months of age. At the onset the joints were swollen and tender. There was a generalized rash soon after birth. At the time of examination there was a palpable spleen; the epitrochlear glands were palpable, and there was a scar of a large, recently healed lesion on the buttocks, 3 or 4 inches in diameter, which had been ulcerated. The ankles and the right elbow were enlarged and slightly tender. The Wassermann reaction was + + + on the infant and on the mother. The roentgen ray showed very marked osteochondritis and some periostitis. Antisyphilitic treatment was started. At 9 months the child was much stronger; the osteochondritis was much improved, and the periostitis was somewhat improved. At the end of the first course of treatment, which was very irregular, at the age of 16 months, the Wassermann reaction was negative.

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CASE 5.—D. E., aged 13 months, had had antisyphilitic treatment previously in the clinic for two years, and the Wassermann reaction changed from + + + to +. At the end of a course of mercury treatment, the patient complained of occasional pains and tenderness along the tibias. Roentgenograms showed some periosteal and cortical thickening of the tibias. Potassium iodid, 10 grains (0.65 gm.), three times a day, was given, and the pain and tenderness were relieved within a few days.

CASE 6.—B. B., aged 18 years, had had pains in the legs since 9 years of age. Swelling over the tibias was noticed for five or six years. The tibias were very irregular and tender. Roentgenograms disclosed gummatous osteitis and periostitis of the tibia and fibula and less of bones of the forearm. The Wassermann reaction was + + +; the mother had previously had treatment. Mercury rubs that were given to the patient a year before did not affect the pains. Neoarsphenamin and potassium iodid were started. In one week there were no more pains; and there was no more tenderness after three weeks. Some swelling of the soft tissues decreased, but the roentgenograms show slight, if any, change after one course of treatment. The Wassermann reaction is still + + +.

Fig. 4 (Case 3).—Appearance of bone lesions at age of 3½ months, under treatment.

CASE 7.—P. D., aged 11 years, had had pain and swelling of the left tibia for seven months. The epitrochlears were palpable. There was anterior bowing of the tibia in the middle third, and more of the left leg. A roentgenogram disclosed anterior bowing and thickening of the cortex of both tibias. The Wassermann reaction was + + +. One neo-arsphenamin injection was given, and potassium iodid was started. One week later the pain had practically ceased. A second injection of neoarsphenamin was given, and a week later there was no more complaint of pain and no tenderness on pressure.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. SOLOMON, LEE, AND SUTHERLAND AND MITCHELL

DR. HARRY E. ALDERSON, San Francisco: Drs. Mitchell and Sutherland's visualization of the bone changes produced by the disease and by therapy makes it evident that routine roentgen-ray examination should be made in all these cases.

Fig. 5 (Case 4).—Appearance of bone lesions at age of 6 months, before treatment.

Dr. Lee's presentation of authoritative information on a very old subject is most interesting, instructive and timely, for there is probably no other subject concerning which there are more false and unfounded ideas. As a member of the California State Board of Medical Examiners, I am well aware of this. We have made it a practice to ask questions on syphilis at each oral examination. After hearing a few hundred candidates answer these questions one is not surprised that there are so many cases of visceral syphilis that go unrecognized and untreated until serious complications develop. As Dr. Solomon stated in his paper, central nervous system complications may arise at any stage. He brings up most interesting questions concerning the patient's resistance and means of increasing it. The danger of overwhelming this by too intensive treatment must not be forgotten. At the same time, it must be remembered that central nervous system involvement is very apt to be a result of inefficient early treatment, so that the best treatment of central nervous system syphilis is prompt, judicious therapy instituted at the time of recognition of the primary lesion. Although methods differ, the kind of early intensive treatment administered varying with the specialist, I believe that the end-results are about the same, provided that the active therapy extends over two years, in early cases, and one is guided by the results of careful examinations at frequent intervals. It should be our aim to give several courses of arsphenamin and mercury, together or alternately, during the first year, the size and frequency of the dose being determined by the patient's tolerance or by complications. No set schedule of dosage should be outlined, for the treatment should be individualized.

DR. ERNEST DWIGHT CHIPMAN, San Francisco: I feel very strongly on the question of congenital syphilis because in our textbooks there is a deplorable lack of matter concerning this phase of the disease. Among the recent books, that of Hazen has a comprehensive chapter, and Stoll of Hartford two or three years ago published an article on late hereditary stigmas which should stimulate further investigation.

DR. L. G. ROWNTREE, Rochester, Minn.: A great service can be done to medicine, as a whole, through the work of the syphilologists if they will give attention to the action of drugs in cases of neurosyphilis and publish their findings. In many instances it is difficult to be certain whether or not the condition that arises is the result of syphilis or of treatment. Dr. McFarland, in Dr. Stokes' department in Rochester, has recently carried out what I believe to be the most practical investigation in this regard, and has shown that in the majority of cases the danger to the kidney in the use of mercury has been overestimated. Dr. McFarland has studied this problem, using hundreds of controls, and has found that only rarely, and then when treatment has not been employed advisedly, has any danger been encountered. This I believe to be a very important consideration. In the same general connection, I think we should have more information in regard to hepatitis. Many cases of jaundice are arising throughout the country and in case any treatment for syphilis is being administered the jaundice is frequently ascribed to the arsphenamin. Dr. Stokes has proved that in many instances

Fig. 6 (Case 4).—Appearance of bone lesions at age of 9 months, under treatment.

this jaundice is an expression of infectious hepatitis rather than of toxic hepatitis. We should all study the effect of endocrine therapy in the treatment of syphilis. We have had two very interesting cases this spring, one a case of Addison's disease in which every treatment was followed by distinct exacerbation of all the symptoms, and this could be prevented absolutely by the simultaneous administration of epinephrin.

DR. CHARLES L. RYBKE, Portland, Ore.: Dr. Solomon has called attention to the cases in which a positive Wassermann reaction occurs for thirty or forty years, in fact during the lifetime of the patient. Would he treat them with no syphilis evident?

DR. WALTER V. BREM, Los Angeles: As to the value of the quantitative Wassermann reaction as a guide to treatment, the diagnostic test is made with a 1:5 dilution of the serum. If no quantitative test is made, the patient may be treated for several months and the serum reexamined and still give a 4 plus reaction, and the patient is said to be "Wassermann-fast." If the serum had been titrated it might have given a reaction in a 1:100 dilution or even more. In a later test the titer may have been reduced to a 1:20 dilution, and still the routine (diagnostic) test would show no change. However, the actual condition would be that the Wassermann reaction is reduced in strength approximately 80 per cent., and we believe that that means that the treatment has been effective to a great degree. If we find that the Wassermann reaction is not decreased in intensity, then we can vary our method of attack. I feel that this is a very important point in the guidance of treatment, and it is one on which Dr. Kolmer has laid stress in the description of his new test.

DR. SOLOMON SOLIS-COHEN, Philadelphia: Regarding the question of the use of mercury, we do not know how mercury cures in cases of syphilis, but it does, and it did before Ehrlich or any of the rest of us were born. When arsphenamin was discovered it was supposed that one injection would effect a cure in every case of syphilis, but very soon we found that this led to disaster. That disaster was overcome by the association of the old mercurial treatment with the new arsenical treatment, and that is the only method of attacking this disease.

DR. FRANK W. CREGOR, Indianapolis: If we take into consideration the vast capillary dilatation that results from physical exercise, we should put our patients at the greatest possible physical rest at that stage of the disease when the spirochetes are being distributed to every part of the body. At that time we are employing our most intensive treatment, and we can limit distribution by rest. I protest against the use of the words "potassium iodid." I am a free user of the iodids and especially of sodium iodid. If we follow the teaching that potassium salts are irritating to the kidneys and depressing to the myocardium and that the sodium salts are just as efficient, why would any one employ potassium salts in preference to sodium salts?

DR. HAROLD N. COLE, Cleveland: The work recently done by Finger and some of the German dermatologists last year is very important. Finger has been trying to show just when the central nervous system of the patient is invaded by syphilis and he has been collecting a series of cases in which they have done lumbar puncture over a period of five years. He found in a series of 3,000 cases that invasion of the central nervous system took place in most cases within the first year of the disease. If that is true, and I am inclined to think that it is, routine lumbar puncture should be done, just the same as we make a Wassermann test, and if these patients exhibit no involvement of the central nervous system we can be fairly sure that they will not develop tabes or general paralysis in the future.

DR. ARTHUR M. ROGERS, Los Angeles: Clinicians who depend somewhat on the laboratory for guidance in treatment have many problems, and some better method of reporting the findings of the laboratories should be devised. We want a report that is definite in meaning and findings. If they tell me that my report after six months' treatment of the patient is exactly the same as at the beginning of the treatment I wish to know whether they mean that or whether they mean, as Dr. Brem said that it is 90 per cent. better.

DR. PAUL J. HANZLIK, San Francisco: Dr. Lee mentioned some of the preparations of mercury tested by Dr. Karsner and myself. These were colloidal preparations. The proteins used as protectives had definite effects when injected systemically. It was found that those compounds which were protected by lysalbinate prolonged the coagulation time of the blood. There were injurious effects on the tissues as indicated by the presence of congestion, hemorrhages and thrombi or emboli, even after the administration of subfatal doses. Some of the preparations were more toxic than the protective envelop itself, indicating that the mercury compound was responsible. These preparations are not altogether devoid of toxicity, and they should be used cautiously, if at all.

DR. W. J. WALLACE, Oklahoma City: Will Dr. Lee tell us of his experience with mercury in cases of neurosyphilis? Will Dr. Solomon tell his dosage and describe the method he uses in giving mercury intraspinally?

DR. CARY EGGLESTON, New York: The question has been brought up as to the choice between sodium and potassium iodid. I believe this is a considerably more difficult problem than merely whether we should select the cheaper salt or the one that is theoretically best borne by the host, sodium iodid. It has been shown in work from the Mayo Clinic that when potassium iodid is given by mouth it inaugurates some definite chemical change which results in the formation in the blood of a sodium-protein compound which is quite different from that formed in the blood by the oral administration of sodium iodid. The statement is often repeated that since potassium salts are depressing to the heart we should give preference to sodium salts. There can be no question about the depressing action of potassium salts on the heart in perfusion experiments, but the important fact which is overlooked is that potassium is so extremely rapidly eliminated from the human body that it is almost impossible to poison the heart by its salts administered orally. We have lost sight of the fact that fifteen years ago it was not uncommon to see patients who were consuming as much as 400 or 500 grains of potassium iodid daily without cardiac depression. We now think that that was an unnecessary waste of potassium iodid; that if results are not secured with 60 or 90 grains a day we had better give up the drug.

DR. SAMUEL AYRES, JR., Los Angeles: I should like to know whether any one has had any experience with tryparsamid.

DR. JEFFREY C. MICHAEL, Houston, Texas: Dr. Cole brought up an important point. Will Dr. Solomon tell us, as nearly as he can, what we are justified in telling our patients about the prognosis of neurosyphilis from the spinal fluid findings? That is, if a patient at the end of the first year of the disease has negative spinal fluid findings, what can we tell him as to the possibility of his developing neurosyphilis later?

DR. JAMES HERBERT MITCHELL, Chicago: The work of Shipley and his co-workers on osteochrondritis syphilitica started us on our work. It is well known that the Wassermann reaction is frequently negative in the patient with congenital syphilis in the first few weeks. Osteochrondritis syphilitica, however, is best seen in the fetus or immediately after birth. The bone changes in rickets are somewhat similar but they do not develop until some months after birth. Therefore, the roentgen-ray examination of the long bones is probably the most valuable method of diagnosis of congenital syphilis at the present time.

DR. R. V. A. LEE, San Francisco: We have used mercury intradurally in a large number of cases with results which have been very good in general. Simultaneous use of mercury and arsenic does not cause irritation of the kidneys when they are not diseased, when the drugs are used in the ordinary clinical way. Drs. Hugh Young and Justine Hill have tested the curability of syphilis by the use of mercury by producing chancres in rabbits and determining with what doses regional lymph nodes could be made noninfectious. In the matter of polydrug treatment, in general many diseases are cured more rapidly when two drugs are used simultaneously than when one is used alone. There is no reasonable basis on general grounds why mercury and arsenic should not be used simultaneously.

DR. ALBERT KEIDEL, Baltimore: About the differentiation of jaundice in treated cases: We have no means of differentiating jaundice occurring during treatment because until recently methods of studying the effect of arsphenamin and mercury on the liver have not been available. Dr. Rosenthal, in the

department of pharmacology, has been investigating some of our cases with a kidney-liver test. It is too early to say anything definite, but in some instances the liver has been damaged to as high as 25 per cent., and in one such case treatment was continued without interruption with no untoward symptoms. Referring to what Dr. Brem said about the high titrate or the low titrate, I wish to say that it is still a positive Wassermann reaction, and we are not saying anything about the degree of titer. In my opinion, a positive Wassermann reaction, whether high or low titer, means virtually the same thing. It is my observation that when patients receive treatment at repeated intervals every week and a Wassermann test is made it is possible to note that early in the treatment in early syphilis there is a very profound diminution in the titer in the positive Wassermann reaction. In some instances this will occur throughout 75 points in the titer. I was pleased to hear Dr. Cohen say that we should treat syphilis in the patient because I do think there are certain general dicta which we can express in regard to the treatment of syphilis. One is that it must be continuous and it must be effective. It must be continued over a considerable period of time, but I cannot agree with Dr. Cohen as to the length of time. I think it would be unwise to subject these patients to the drudgery of routine treatment throughout their lives. I have no doubt that there are cases that are never cured but I think they are apparently in the minority. In reviewing our cases we are convinced that those patients that are adequately treated are cured within one or two years of the treatment. I mean by that that the Wassermann reaction has been reversed and that there is nothing to indicate that they are still syphilitic. Dr. Cregor spoke of exercise at the time of the general dissemination of the infection. I had not thought of that before, but the only thought that occurs to me now is that the general dissemination of the infection is accomplished at the time we recognize the disease, or make the diagnosis. It has not, of course, reached its peak but it has occurred. I agree with what Dr. Cole said about routine lumbar punctures. We have made a puncture in every case in our clinic, and in practice and in this way can show that in 20 per cent. there are abnormalities in the cerebrospinal fluid. It has been shown by other workers that all spinal fluids that are free of these abnormalities are not infectious. Animal inoculation has proved that they are not. Some one spoke of tryparsamid. It is of no value in early syphilis, as it has no influence on the blood or Wassermann reaction. For some reason it does have a very beneficial effect in late neurosyphilis. As to prognosis, in a patient whose fluid was negative after treatment lasting a year I think we might answer in this way: We were unsatisfied on that point and so made repeated examination of patients who had been treated and almost always those cases that were negative when treatment was begun were still negative, except two cases, and those had bone lesions of the skull and we had reason to believe that the nerve centers had been reached in that way. It is fair to believe that those patients with negative spinal fluid before treatment will be negative afterward. We have given a great many doses of flumerin, and have proved that it does kill spirochetes.

DR. HARRY G. IRVINE, Minneapolis: About the quantitative test, we have recently studied several thousand tests with the Kolmer reaction and at the same time have taken blood from the same patient daily for a period and tested the same blood over periods of time. The quantitative test and the routine test both show a certain amount of variation. It is not possible to draw too definite conclusions from a single positive Wassermann reaction one way or another. I agree with Dr. Keidel that a positive Wassermann reaction means positive syphilis, but we should be sure that it is a positive Wassermann reaction, and that can only be done with very careful technic. Our work showed a great deal more reliability in the Kolmer test than in the test with cholesterolized antigen. The Kolmer antigen and the cholesterolized antigen showed a disappearance of the positive reaction much more slowly than the routine test. The Kolmer test shows an early infection much sooner than the routine test and it is an important contribution to our work.

DR. H. C. SOLOMON, Boston: The positive Wassermann reaction is an indication that the patient has syphilis, but it needs a good deal of clinical checking. If a patient has no evidence of syphilis except the positive Wassermann reaction, then the question as to whether to treat that syphilis depends on the patient. If he is in the twenties or thirties, and it is reasonable to believe that he has syphilis, and if one can treat that patient for a certain period of time, I believe that patient should be treated. There is good evidence if there is a positive Wassermann reaction that the patient has syphilis, and in a young person there is a good chance of developing syphilis. A little treatment is dangerous, and unless a patient can be treated sufficiently I think he should be left alone. If a man is 50 or 60 and has had syphilis for thirty or forty years let us assume that he can go another thirty or forty without treatment, and that is long enough. I think we have to consider the individual, as has been indicated. About the quantitative Wassermann reaction, when we have one test it is not very satisfactory, but if we do as Dr. Keidel has indicated—take a test every time an intravenous injection is given, once or twice a week, it is very important to have this test. If one is going to pay any attention to a Wassermann test, why take a test once in six weeks or six months and be exceedingly depressed when one finds it is positive or elated when it is negative? One does see a variation in the course of months and if one sees that, it is encouraging. In the spinal fluid examination also, titration is very helpful. If we start with a postive Wassermann reaction in 5: 100 and begin to get it negative in 0.2 c.c., we know we are getting to where we can prognosticate that things are going on well, whereas if there is no change in several months we had better follow another method. In the spinal fluid this is very helpful. Dr. Cole struck the keynote of what is one of the most important things in neurosyphilis, and that is lumbar puncture. About 20 per cent. of these patients suffer with neurosyphilis; and if that 20 per cent. had treatment from a physician who should be capable of treating syphilis, much should be accomplished, yet they develop central nervous system syphilis. The symptoms appear late, but the spinal fluid in the majority of cases is positive early. If one will do a Wassermann test on the cerebrospinal fluid, the treatment can be checked by the examination of the fluid just as we check the systemic treatment by the blood Wassermann reaction. If at the end of six months or a year it is still positive when it was positive in the beginning, that patient is not getting the proper treatment, no matter what it is. In the majority of instances the most intensive treatment has not been given. I think there is no question about the fact that in the majority of instances in which at the end of six months the spinal fluid is negative, that patient will not develop severe central nervous system syphilis. There are exceptions. In one case that I recall in which the cerebrospinal fluid was negative at the end of one year, six years later it was positive. I believe, however, that if we see a patient with a negative cerebrospinal fluid and it still remains negative after six months, the chances for the development of central nervous system syphilis are remote, and then we can follow up the case.

Edema.—While the significance of salts in the development of edema has attracted the attention of investigators for a considerable number of years, the conception that hormones may also play a part in this process is of more recent origin and it is mainly to the investigations of Eppinger that we owe this addition to our knowledge. Eppinger found that in many cases of edema, especially in edema due to the so-called myodegeneration of the heart, to nephrosis, acute and subacute nephritis and chronic nephritis—provided in the latter cardiac symptoms are not yet threatening, and the nonprotein nitrogen in the blood is still relatively low—the administration of thyroid gland may lead to the discharge of edematous fluid even in cases in which other modes of treatment are ineffective. In normal individuals thyroid does not act as a diuretic, neither does it strengthen the effect of caffein, but following oral or subcutaneous injection of water or sodium chloride solution thyroid administration causes a more rapid elimination of both of these substances.—Leo Loeb.

THE TRIGON SURGICALLY CONSIDERED

ITS PATHOLOGY, A NEW METHOD OF DIAGNOSIS, AND ITS OPERATIVE MANAGEMENT *

ERNEST M. WATSON, A.M., M.D.
BUFFALO

Changes in the trigon, while they have been observed from time to time, have not received the careful study that is due a condition of such functional importance.

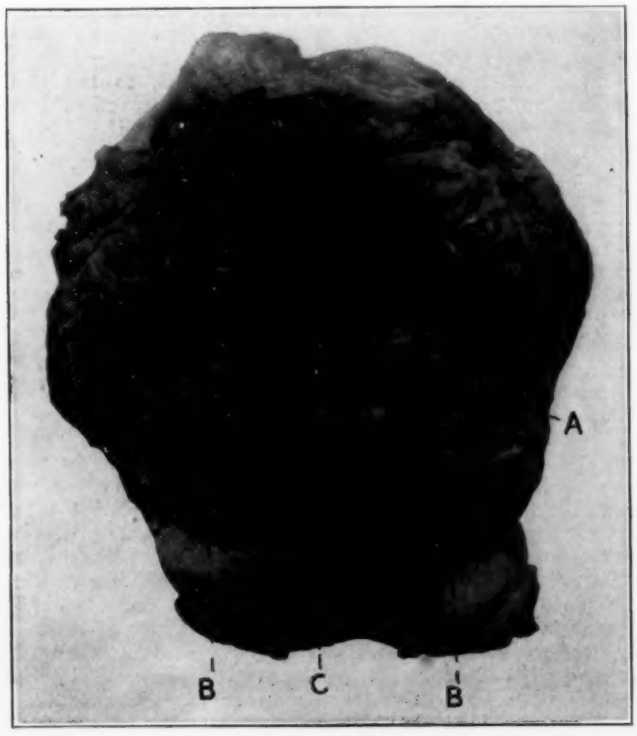

Fig. 1.—Necropsy specimen of greatly hypertrophied trigon secondary to an enlarged prostate and a thickened bladder: *A*, hypertrophied and greatly elevated trigon (interureteric ridge, or Mercier's bar); *B*, *B*, lateral prostatic lobes greatly enlarged etiologically responsible for the secondary trigonal hypertrophy; *C*, middle lobe of prostate.

The fundamental work of Wesson [1] has done much to clarify our views regarding the development and function of the trigonal muscle. More recently, Young and Wesson [2] have given us the only study in English of the clinical pictures and operative management of trigonal obstruction.

A search of the literature has failed to give any information regarding the detailed pathology of these so-called obstructive or hypertrophied trigons, yet the rather infrequent enlargement of the subtrigonal or Holmes group of glands, while of only occasional clinical interest, is now rather generally recognized on cystoscopy and its operative removal well understood. The condition of the trigon to be considered here is that form of trigonal enlargement giving a greatly hypertrophied and elevated interureteric ligament, or Mercier's bar, which enlargement produces a bas-fond beyond it containing a varying amount of residual urine—a condition amenable only to surgical treatment. Trigonal changes of this character are, I believe, more frequent than is generally recognized. From our present knowledge, we must look on them as a condition secondary to obstructive lesions along the lower urinary tract; namely, urethral strictures, median bar formation, and prostatic hypertrophy. Corbus and O'Conor [3] have reported a similar condition in certain cases of tabetic bladder, though such a lesion usually gives a trigon and interureteric ligament of normal size, or one that is atrophic. Superimposed infection seems to be a definite augmenting factor in these cases prone to undergo trigonal hypertrophy. The presence of the primary obstructive lesion can usually be demonstrated at the time the secondary change in the trigon is recognized. However, in one case studied the patient had a residual urine of 150 c.c. contained in a bas-fond beyond the trigon, and symptoms of dysuria and frequency persisting for ten years after a punch operation for median bar obstruction, with no sign of median prostatic obstruction existing at the present time. One other case presented an appreciable residual urine with its associated clinical symptoms after prostatectomy, which residual urine was found to lie in the bas-fond beyond a trigonal bridge.

From the material studied, it has been possible to group the pathologic changes of trigonal obstruction in three divisions: (1) a simple muscular hypertrophy; (2) a muscular hypertrophy associated with hypertrophy of the subtrigonal gland tubules, and (3) a type of "dissecting trigon" without hypertrophy of any sort, either muscular or glandular.

Fig. 2.—Dorsal surface of middle portion of trigon and interureteric ligament; hypertrophy of Type 1 (operative specimen): *A*, upper portion of trigon (hypertrophied interureteric ridge); *B*, apex of trigon.

In the simple hypertrophy type, the trigon grossly is everywhere thickened. Its surface is usually somewhat puffy and edematous, but smooth, and over it there is a generalized process of hyperemia. The interureteric ligament, or Mercier's bar, is especially prominent. It stands up like a dividing ridge, and may measure 2.5 cm. in height and 2 cm. in thickness, as in one specimen studied. This dividing ridge, or bar, is seen to originate from each upper extremity of the trigon, and on its distal portions are situated the openings of the ureters, which are usually more puffy and edematous than normal. The microscopic study of sections of this type of trigon removed at operation shows that the mucosa is somewhat thickened and its surface thrown into numerous fine folds. Beneath the mucosa there is encountered a varying degree of round cell infiltration denoting a definite reaction to infection, and this would appear to be of rather

* From the Department of Urology Medical School, University of Buffalo, and the Urological Service of the Buffalo General Hospital.

* Read before the Section on Urology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

1. Wesson, M. B.: Anatomical, Embryological and Physiological Studies of the Trigon and Neck of the Bladder, J. Urol. **4**: 279-316 (June) 1920.

2. Young, H. H., and Wesson, M. B.: The Anatomy and Surgery of the Trigon, Arch. Surg. **3**: 1-37 (July) 1921.

3. Corbus, B. C., and O'Conor, V. J.: The Tabetic Bladder from the Standpoint of the Urologist, J. A. M. A. **79**: 1750 (Nov. 18) 1922.

long standing. The round cell invasion is usually quite superficial. The blood vessels are fairly numerous, especially as the region of the lower fourth of the trigon is reached. Some of the more superficial vessels have about them considerable round cell infiltration. Beneath the barrier of round cell infiltration, there is considerable loosely placed fibrous tissue, which is distributed well down to the base of the trigon or the beginning of the true bladder muscle. In the upper portion of the trigon, in the region of Mercier's bar, there are numerous hypertrophied muscle bundles, which run transversely or nearly so; while, as the central and apical portions are reached, the muscle bundles are more longitudinal and less given to hypertrophy.

The second type of trigonal enlargement is one of a muscular hypertrophy associated with an increase in the size and number of the subtrigonal gland tubules and those accessory to them. In the gross, the trigon of this type is similar to that in the first group, but its surface is a little more irregular and it is less likely to

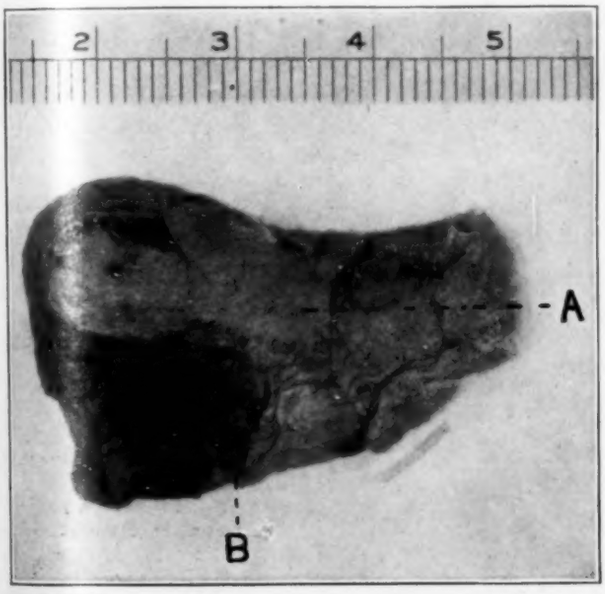

Fig. 3.—Lateral view of specimen in Figure 2: *A*, cut surface of thickened muscle; *B*, mucous membrane extending far beneath the trigon into a true bas-fond.

be an asymmetrical organ. The glandular elements, however, do not appear to reach the size and shape characteristic of the subtrigonal hypertrophy usually attributed to the Holmes group, and never do they become definite lobes projecting into the bladder. In the specimens studied, the glandular hypertrophies have occupied the upper third of the trigon usually far beneath the interureteric ligament, and situated almost on the true bladder musculature. In their location thus described, the tubules appear to have a different site than the typical Holmes group, which are usually encountered in the lower third of the trigon just within the vesical orifice. In this group, also, a thickening of the mucosa with round cell infiltration usually in the superficial areas is encountered. Trigons of the two types just described have been encountered secondary to urethral stricture and median prostatic bar formation, and in such cases there has been a long existent cystitis with pus and organisms present in the bladder urine.

The third type of obstructing trigon, the mechanically dissecting trigon, may be without appreciable muscular hypertrophy, with no glandular elements present and with no evidence of round cell infiltration. It would appear that this type is less common, less prone to assume the large dimensions of the two preceding, and without a very great increase in its size. In the gross, this type of trigon exists as a thin ridge. The organ is not puffy or edematous, and it appears in the bladder as a thin membrane, which is more undermined than the two groups just described. Trigons of this type have been encountered in cases of prostatic hypertrophy of long standing, but without infection present in the bladder urine for any length of time.

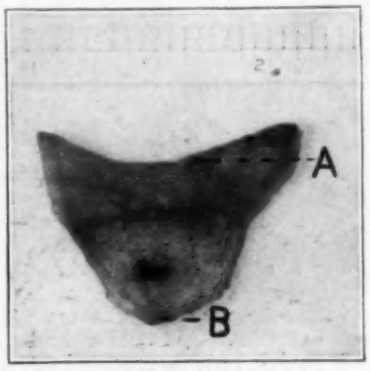

Fig. 4.—Dorsal surface of middle portion of trigon and interureteric ligament, dissecting trigon (operative specimen): *A*, upper surface in the region of the interureteric ligament not appreciably hypertrophied; *B*, apex of trigon.

The diagnosis of the true hypertrophied type of obstructing trigon is not always an easy matter. On cystoscopy, the greatly enlarged interureteric ligament can readily be seen; but often on a little further observation this obstructing bar not infrequently may change in its shape and prominence, depending on any straining by the patient. Often the straining may not be observed by the examiner, and the more or less involuntary resistance of the patient is noted only by this changing prominence of the interureteric ligament. On observing this interureteric pull further, it is seen that the sides of the bladder may be drawn in toward the median line. The morphology of the bladder then suggests somewhat the hour glass outline, which observation has been noted by Young and Wesson;[2] and, as has been further stated by Young, in one case in which a diverticulum was present associated with what appeared to be a hypertrophied and obstructing trigon on cystoscopy, it was planned to divide this trigon at operation. At operation, however, the diverticulum

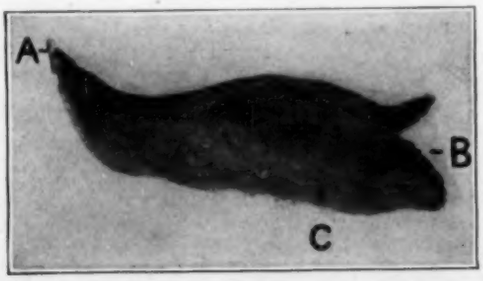

Fig. 5.—Lateral view of specimen in Figure 2: *A*, apex of trigon; *B*, region of interureteric ligament; *C*, cut edges of muscle fibers (not hypertrophied).

was removed, but the trigon on palpation appeared only moderately enlarged, and the interureteric bar was not an actual obstructing element. Reference is made to this observation to make us realize the difficulty of making an accurate diagnosis. It shows that an apparent obstructing interureteric ligament should be established as a real pathologic obstruction before any operative therapy is instituted.

The somewhat suggestive hour glass outline can be noted on cystoscopy in cases of true trigonal obstruction. It has been found that this form is present, however, only when the bladder is partially filled with fluid and the interureteric bar is not in this way put on a

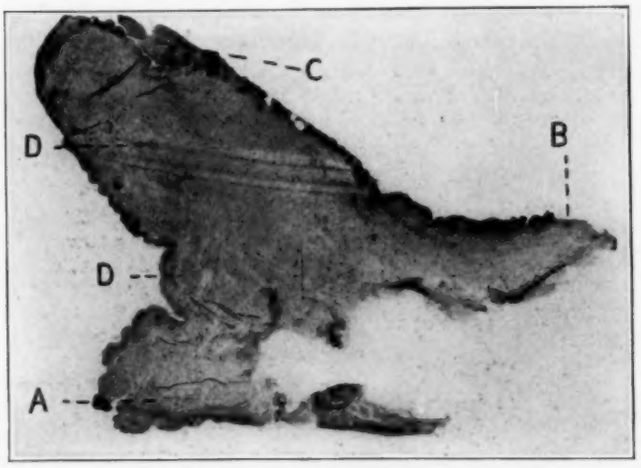

Fig. 6.—Transverse section through the trigon; Type 1 hypertrophy (operative specimen): *A*, floor of bladder beyond the trigon (bas-fond); *B*, apex of trigon; *C*, elevated trigonal ridge (interureteric ligament, "Mercier's bar"); *D*, hypertrophied muscle bundles.

stretch. In these cases it has been further noted that this trigonal pull from either side is overcome entirely when the fluid is allowed to run into the bladder through the irrigating cystoscope until the bladder is filled to its capacity. The disappearance of the somewhat characteristic hour glass outline on distention suggested that a cystographic study of this condition should be of value. Corroborating the cystoscopic impression in these cases of true obstructing trigons, we have been able to demonstrate the suggestive hour glass form when the bladder is only partially filled with a shadow-casting fluid. In accomplishing this, we have first determined the bladder capacity with sterile water, then filled the bladder two thirds full of sodium iodid, and taken a cystogram. As a further step in the verification of our cystoscopic findings, we have filled the

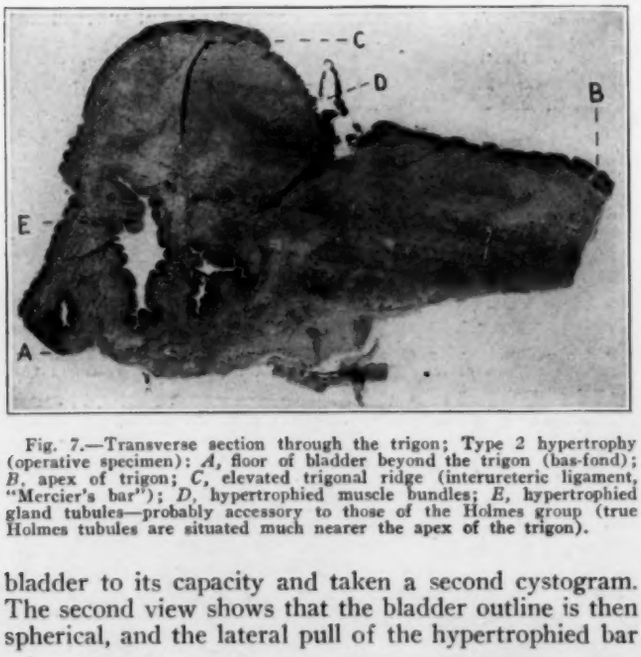

Fig. 7.—Transverse section through the trigon; Type 2 hypertrophy (operative specimen): *A*, floor of bladder beyond the trigon (bas-fond); *B*, apex of trigon; *C*, elevated trigonal ridge (interureteric ligament, "Mercier's bar"); *D*, hypertrophied muscle bundles; *E*, hypertrophied gland tubules—probably accessory to those of the Holmes group (true Holmes tubules are situated much nearer the apex of the trigon).

bladder to its capacity and taken a second cystogram. The second view shows that the bladder outline is then spherical, and the lateral pull of the hypertrophied bar is obliterated. In the cases in which operation has been performed, a subsequent cystogram with the bladder two thirds full shows the bladder outline to be normal.

The method of management of the true obstructive trigon is entirely surgical. As the study of Young and Wesson points out, the trigon may be divided by suitable instruments entirely through the urethra, or may be similarly divided or partially excised through a perineal urethrotomy in the membranous urethra. Thirdly, it may be approached suprapubically, and either divided or excised. The last procedure is, to my mind, the method of choice. It insures perfect exposure, complete hemostasis (and the bleeding is considerable), and the sides of the trigon (Bell's muscle) need never be injured. It has been my practice to remove a wedge-shaped piece of tissue comprising about the middle third of the trigon, thus making the trigon remaining flat and on a level with the bladder floor. The cut edges on either side are always closed

Fig. 8.—Transverse section through the trigon; Type 3; dissecting trigon: *A*, elevated trigonal ridge (interureteric ligament not hypertrophied); *B*, apex of trigon; *C*, base of bladder beyond the trigon, site of a deep but narrow bas-fond (specimen partly broken in embedding and cutting).

by a continuous plain catgut suture to control bleeding, and the bladder closed about a drainage tube, which remains in place for a week or ten days.

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ABSTRACT OF DISCUSSION

DR. M. B. WESSON, San Francisco: It is generally accepted that trigonal hypertrophy is a clinical entity, and Dr. Watson has clearly shown that there is a pathologic basis for such a view. The only phase of the question on which there is any difference of opinion is the method of surgical treatment. After the cause of the urethral obstruction has been eliminated, the pouch beneath the trigon must be removed. Young's method is to cut Mercier's bar and extend the incision to the vesical orifice, leaving intact Bell's muscles. Last year we found in the clinic an hypertrophied trigon and beneath it an anomalous septum, which was removed along with the redundant mucous membrane, and the cut edges of the trigon were then reapproximated so as to restore Mercier's bar. I think this is the operation of choice as the pouch is removed, and the trigon restored to its original condition. The ideal striven for is to restore the base of the bladder to its normal condition.

DR. C. E. BURFORD, St. Louis: I was anxious to see some pictures following operation to know whether after full dissection and reuniting there was still pull on the trigon, or whether that was done away with. This is something absolutely new. While we have recognized these things with the cystoscope, we have not seen any pathologic specimens presented before.

DR. TERRY M. TOWNSEND, New York: Dr. Watson's paper strikes most forcibly all who deal with urinary obstruction. He clarifies a pathologic condition that undoubtedly may be and has been confused with the median bar, but the relief of which cannot be accomplished with any punch operation with which I am familiar. I have now in mind patients on whom I have performed multiple operations in the endeavor to relieve their urinary obstruction but who are still carrying residual urine, so far as I know. I believe they suffered from a surgical condition of the trigon and could have been cured by the operative measures outlined by Dr. Watson.

DR. OLIVER LYONS, Denver: I had occasion to operate on a rather large diverticulum of the bladder. There was something

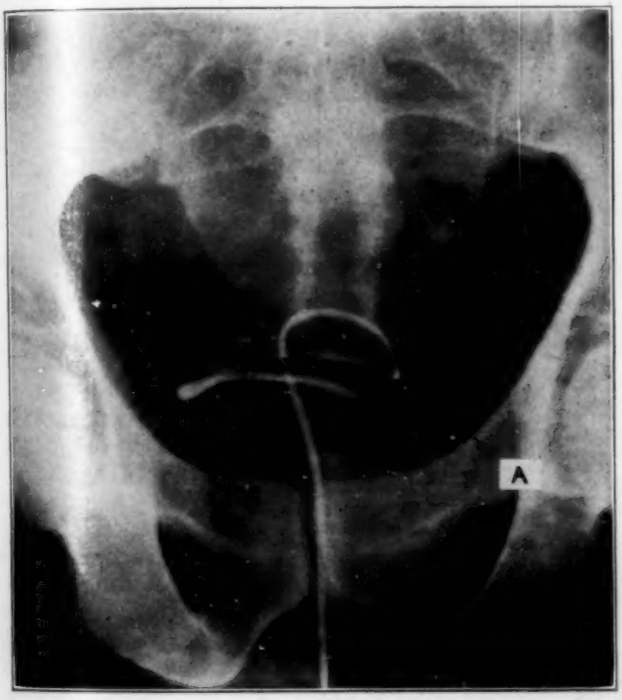

Fig. 9.—Plain roentgenogram of bladder region showing the ureteral catheter coiled in the bladder beyond the enlarged trigon: *A*, loop of the ureteral catheter in the bas-fond beyond the hypertrophied and obstructing trigonal ridge.

like 17 or 18 ounces of residual urine at the time of operation, and the same amount persisted after operation. I did a cystoscopy. The man was in his early thirties. I repeated the examination several times before I could make myself believe that the condition Dr. Watson presented was the cause of the residual urine. That was soon after the operation. I thought I would try some milder means of treatment, and so I used fulguration. After two fulgurations the man was able to empty the bladder completely. I am sorry to say that the cystogram did not show anything, either before or after operation, except a large diverticulum.

DR. W. J. WALLACE, Oklahoma: The point I am most interested in is the end-result, and when Dr. Watson closes I hope he will touch specifically on that feature.

DR. HERMAN L. KRETSCHMER, Chicago: The point I am particularly interested in and one on which I think we should dwell particularly in the discussion is the question of other associated lesions. One illustration showed hypertrophy of the trigon in the presence of median lobe enlargement and a small lateral lobe. I think that, in our enthusiasm, we may get away from fundamental principles. Hypertrophy of the trigon means obstruction just the same as hypertrophy elsewhere, and it seems to me that we should get down to determining the cause of the obstruction. We should not do a trigon resection and stop there, but should search for obstruct-

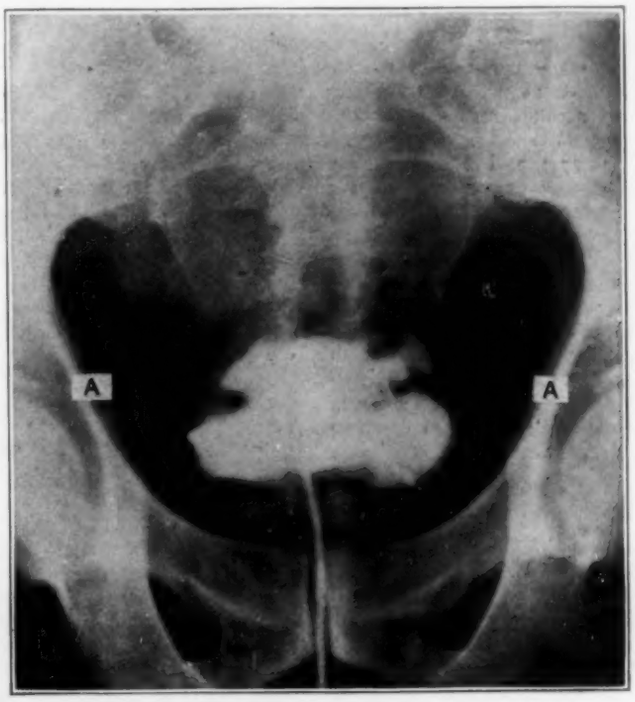

Fig. 10.—Cystogram of patient in Figure 9, showing bladder partially filled with 10 per cent. sodium iodid solution: *A*, site of extremities of hypertrophied trigon exerting a lateral pull sufficient to distort the bladder outline characteristically.

Fig. 11.—Cystogram of patient in Figure 10, showing bladder completely filled with 10 per cent. sodium iodid solution. By filling the bladder to capacity, the lateral pull of the hypertrophied trigon is for the moment overcome and the bladder outline is normal.

ing lesions. It seems to me that some of them may be attributed to the presence of small lobe hypertrophies, which we must remove at the time we excise the trigon. It seems that the end-results are what we are looking for, and if we

excise the trigon and do not relieve the obstruction it is evident that we have overlooked something. The big thing is to look for the obstruction that causes the hypertrophy of the trigon. Dr. Watson said that one patient had had a prostatectomy. I should like to know what, if any, operations had been done in the other two cases before he saw them.

Dr. E. M. Watson, Buffalo: The lesion that causes the hypertrophy is important, but we do not see it very often. My present experience is with only a few cases; I have two patients at present that have not come to operation, but I can recall others that unquestionably had something of this sort. While our arguments are based on only four cases, it is a start, and in the future we can all look for them and in that way accumulate more reliable data. The question of end-results is, of course, the main thing. The question of the mechanism of urination is still a little obscure, but the work of Wesson and Young makes us feel that if we can preserve the sides of the trigon—if we have that little muscle (Bell's muscle) extending down along the trigon—it does much to preserve the function of urination. Two of my patients emptied their bladder down to 2 c.c. from a large residuum, and the others to 10 c.c. from 100 c.c. The thing of importance is to leave the muscle of Bell, the extreme lateral margin of the trigon, and take out only the little ridge that runs between the ureteral orifices, leaving the muscle on either side. The little ridge on the side is only a potential thing, and becomes less as time passes. I think that the end-results have been very satisfactory. We have not done anything to interfere with urination, but to relieve something higher up than the vesical orifice. Dr. Kretschmer's remarks about the presence of the obstructions in the urethra are very important. To my mind the enlargement of the trigon is secondary to some obstructive lesion toward the outside, beyond the trigon. That must be removed first to relieve these patients; and when we do this, the hypertrophied trigon must also be removed because it has become an obstructing lesion. When we have a definite pathologic entity forming a bridge across there it does not disappear of itself. One of these patients had a successful prostatectomy, but the frequency of urination persisted as well as the obstruction, and until we removed the little bridge he was not relieved. Two of the patients had strictures, but a No. 20 sound could be passed into the bladder. Another patient had a punch operation ten years before, but the obstruction still persisted. I think that we must look on this condition as a secondary obstruction.

Fig. 1.—Typical second type arthritis of the spine: spurring and lipping of vertebral bodies.

The Unmarried.—In the "great unmarried" there are numerous hoboes, vagrants, fallen women, and human derelicts of all sorts. There is also an alarmingly high percentage of female college graduates, and numerous other women of high intelligence and character who have qualified themselves to earn a comfortable independent living.—Holmes: Studies in Evolution and Eugenics, New York, 1923.

THE SECOND GREAT TYPE OF CHRONIC ARTHRITIS

FOURTH STUDY *

LEONARD W. ELY, M.D.
SAN FRANCISCO

In several papers I have set forth the results of investigations into the second great type of chronic arthritis,[1] which may be thus recapitulated:

It is a chronic form of arthritis recognized roentgenographically and post mortem by the presence of cartilaginous and bony outgrowths at the margins of the articular cartilages, at or about the lines of attachment of the capsule. It is very frequent in its occurrence, wide in its distribution, and of ancient origin. Skeletons unearthed in Egypt by archeologists show its characteristic changes. It is known under various names. The Germans, who in modern times first established its clinical identity, call it arthritis deformans; the English call it osteo-arthritis; Goldthwait called it hypertrophic arthritis; Nichols and Richardson called it degenerative arthritis. This is the senile arthritis of some writers, the "chronic rheumatism" of the elderly. When it occurs in the terminal interphalangeal joints of the hands, it is known as Heberden's nodes, and is often mistaken for gout. It is known by many other names by other writers.

No cause of the disease ever has been established. It is usually ascribed to trauma, either to one severe trauma, or to the habitual trauma of laborious occupation, but I have tried to show that trauma could not possibly be the cause. Infection has been advanced as a cause, but never has been demonstrated. Many observers think that emotional and digestive disturbances, while not directly the cause, nevertheless bear some causal relationship to the exacerbations of the disease. In 1920, 1921 and 1922 I showed that the disease occurred almost exclusively in persons who had infection in the

* From the Stanford University School of Medicine.

* Read before the Section on Orthopedic Surgery at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

*Owing to lack of space this article is abbreviated in The Journal by the omission of a table. The complete article appears in the Transactions of the Section and in the author's reprints.

1. Ely, L. W.: The Great Second Type of Chronic Arthritis, Arch. Surg. **1**: 158 (July) 1920; Further Studies: California State J. M. **19**: 415 (Oct.) 1921; Third Study: ibid **20**: 329 (Oct.) 1922. Ely, L. W.; Reed, A. C., and Wyckoff, H. A.: The Amoeba as the Cause of the Second Great Type of Chronic Arthritis, ibid. **20**: 59 (Feb.) 1922.

alveolar processes of their jaws. In 1922, Kofoid and Swezy found *Ameba histolytica* in the marrow of one of my specimens, and Barrow found it in the stools of one of my patients.

The disease is essentially one of middle and advanced age. It occurs occasionally in the third decade. As observed clinically, it is most frequent in the fifth, sixth and seventh decades. It never occurs in childhood. Arthritis deformans juvenilis is a misnomer. It is found in persons of most diverse occupations, and in those of all walks of life, rich and poor. It is sometimes seen in one joint only, sometimes in many joints. Often it gives symptoms in one joint alone, though existing in many joints. In other words, it may exist indefinitely without giving symptoms. In the orthopedic clinic at Stanford it is by far the most frequent disease with which we have to deal. Established always with the roentgen rays, its diagnosis comprises more than one tenth of the diagnoses in our clinic. A heavy proportion of bones from the dissecting room show the characteristic changes.[2]

The gross pathologic changes, those on which the diagnosis is made, have been known for many years. They are, in brief, bony and cartilaginous outgrowths at the margin of the articular cartilages—spurring, lipping, border exostoses—wearing away of the joint cartilage, leaving the underlying bone bare, eburnation and grooving of this bone in the line of joint motion, and thickening and villous proliferation of the synovial membrane. As a result of these changes, the joint becomes deformed and distorted, but no union of the articulating bones, whether by bone or by fibrous tissue, practically ever occurs, except in the spine. The appearance of these joints is entirely different from that of a joint invaded by a bacterial organism. The two can be distinguished easily by the naked eye.

Fig. 2.—Resected specimen of second type arthritis of the knee: new bone and cartilage at circumference of joint; irregularity of articular surfaces; proliferation and villous formations of synovial membrane.

A few investigators have described the histologic changes. Nichols and Richardson's[3] description is classic. The joint cartilage is irregular in thickness, and markedly so in structure. It is fibrillated and calcified. Its cells are swollen. Parts of the cartilage may be ossified. The underlying bone is thickened and dense. The marrow is fatty and fibrous. The synovial membrane is thickened, fibrous, and is thrown into villi. Several observers have noted cyst formation in the bone in the region of the joint.

2. Ely, L. W.: A Study of One Hundred Dry Bones Sawn in the Laboratory: Bone and Joint Studies, I, Stanford University, California, 1916, published by the university.
3. Nichols, E. H., and Richardson, F. L.: Arthritis Deformans, Jour. M. Res. **21**: 149, 1909.

The baffling thing about all these pathologic features was the absence of a key to them. No one could say why they occurred. Given the original tubercle in the bone marrow, for instance, one can easily trace the entire sequence of events in a tuberculous joint, but in this type of arthritis the case was entirely different.

Three years ago I called attention to the areas of aseptic necrosis in the bone marrow in the vicinity of the joint, and attributed to them the prime rôle in the pathology. Further investigations have confirmed this view. The problem then was to find the organism responsible for these areas of necrosis, and Barrow, Kofoid and Swezy have indicated the direction which the path to the solution would take. To these areas of aseptic necrosis is probably due the fracture of the femoral neck in the elderly, as well as the frequency of nonunion following it. The stiff, ankylosed, painful joints following intra-articular fractures in the elderly are probably caused by the same thing.

The symptoms are those of a low grade chronic inflammation; namely, stiffness, limitation of motion, and often swelling and deformity. Pain may be absent or present. As a rule, it is not severe, unless aggravated by injury. The joint is to be viewed as a damaged machine. It is easily sprained or strained, and then is wont to become painful. When the spine is affected, the pain is referred out along the spinal nerves, and is usually diagnosed as myalgia, neuralgia, neuritis, radiculitis, myositis or fibrositis. A very large proportion of the so-called sciaticas owe their origin to spinal arthritis. Roentgen films show the characteristic lesions in the spine, and the symptoms yield to appropriate treatment.

The diagnosis can be made with almost complete certainty with the aid of the roentgen rays. These show spurring and lipping at the circumference of the joint cartilage. This spurring and lipping is practically never seen in other forms of arthritis except occasionally in arthritis of the first type that has been very chronic and has lasted a long time, especially in the feet, and once in a while in tuberculosis of the spine.

Before I take up the subject of treatment, it may be well to give an analysis of the cases seen at the Stanford clinic during the past year. The diagnosis was made in every instance with the roentgen ray. When doubt existed, the case was thrown out. There were 109 patients, fifty-four of whom were men and fifty-five women. This proportion differs from the three preceding series, in which the men outnumbered the women about two to one. The youngest patient was 30, the

oldest, 76. Ten were in the fourth decade, thirty in the fifth, forty in the sixth, twenty-two in the seventh, and seven in the eighth. Infection in the alveolar processes of the jaws was present in sixty-one, and probably present in twenty-three. In three it was not noted. Twenty of the patients were edentulous; in one of them, alveolar infection had been demonstrated previously in the clinic. Two had lost almost all their teeth, but had no infection about the remainder. The dental part of the problem has been in the hands of Dr. John L. Campbell, head of the dental department of the Stanford clinics, to whose skill and interest much of our results are due. The presence of infection was determined with the roentgen rays. Many of the patients refused to have roentgenograms taken. Then the infection could be noted only as probable. In the edentulous patients and in those who had lost most of their teeth, previous infection is almost certain.

During the past year an attempt has been made to consider the problem of this disease in relation to intestinal parasites. Dr. Harry Wyckoff and I have made the study a common one. Dr. Wyckoff has been in charge of the laboratory work. The attempt has not been altogether successful. Many of the patients would not submit to the examination, and many would not see it through.

Dr. Wyckoff, who conducted the search for intestinal parasites, reported that although he was able to induce only thirty-six patients of the series to submit stools for examination, and although many of these brought but one specimen, nevertheless in fourteen of the thirty-six, or 38.9 per cent., intestinal parasites were demonstrated. The positive findings were protozoa in all cases. *Giardia intestinalis* was found once, *Chilomastix mesnili* once. The rest were amebas of various species, *Ameba coli* predominating. The percentage of

Fig. 3.—Stained slide of a section of the end of a bone, under low power: the cartilage is gone, and the thickened, "eburnated" bone itself forms the articular surface; the joint is hopelessly damaged, for no treatment will ever restore the articular cartilage.

positive findings increased as the search progressed. This is in accord with the statement of other parasitologists, to the effect that the more carefully and thoroughly the search is made, the more often will parasites be found. In 50 per cent. of the positive cases more than one stool examination was necessary before parasites were found, while in nearly 50 per cent. of the negative cases but one stool was submitted for examination. Over 73 per cent. of the negative cases had not more than two stool examinations. It is not uncommon to examine four or more stools from one patient before parasites are found. With better cooperation on the part of patients, the percentage of positive findings in the stools would probably be far higher.

I have had one operative case during the year, that of Patient 236, a porter, aged 60 years. This was a severe case of arthritis of the ankle with painful ankylosis, following a Pott's fracture. I resected the talus in the presence of Drs. Swezy, Wyckoff and Gunn, and submitted the specimen to them for examination immediately after the operation. It contained

Fig. 4.—Stained slide of a section through the head of the femur: The joint surface is rough, and the cartilage has disappeared from most of it; at the left the articular cartilage persists, but its ossification evidently has begun; some of the cavities in the femur head are cysts, some are filled with fibrous tissue; bone destruction predominates here, rather than bone production; this, contrary to the prevailing idea, is the rule in this type of arthritis; these cavities can usually be distinguished in the roentgen film, if they are sought.

the usual necrotic cavity in the bone, but no parasites were found in it. My experimental work has been inconclusive.

CONCLUSION

Chronic arthritis of the great second type is caused by some form of nonbacterial organism, probably a protozoon, which, domiciled in the gastro-intestinal tract, gains access to the system through the foci of osteomyelitis about the roots of the teeth, and causes an aseptic necrosis in the marrow in the region of the joints. As the result of this necrosis, marked bony and cartilaginous changes take place, which distinguish the disease clinically, roentgenographically, and in the laboratory. The disease is more frequent in men than in women as clinically observed, is essentially one of middle and late life, never occurs before the third decade, is widely distributed in its occurrence, and occurs in persons of all occupations and walks of life. It is usually multiple, though it may give symptoms in one joint alone, and may exist indefinitely without symptoms. It is probably responsible for fracture of the neck of the femur in the elderly, and for the stiff, painful arthritis that often follows their intra-articular fractures. It deforms the joints so that they are easily sprained, but practically never causes a bony ankylosis except in the spine. It is responsible for most of the cases of so-called neuritis, sciatica, myalgia, myositis, fibrositis, radiculitis and lumbago. Rest, heat and appropriate diet usually improve the symptoms, but the disease itself is best treated by the removal of dead teeth, and by the eradication of intestinal parasites. The search for parasites should be conducted by a skilled parasitologist. If not, its results will be disappointing. Our results indicate that no one protozoon is responsible. It may be any one of a number.

ABSTRACT OF DISCUSSION

DR. JOHN V. BARROW, Los Angeles: These arthritis cases all harbor intestinal protozoa of some form: amebas, *Chilomastix, Giardia,* trichomonads, etc. The pathologist's efficiency in finding protozoa can be checked by his ability to demonstrate the presence of these organisms in these cases, for they are 100 per cent. present. In treating these cases, the first effort is to stop the forward process of the disease. When this is done, the orthopedist can accomplish lasting and excellent results. The work of ridding the patient of intestinal infestation comes first; and, as this is accomplished, the patient improves. The therapeutic test thereby strengthens the laboratory presumption. The medical as well as the surgical management is chronic. A few doses of ipecac, no matter how efficacious, will not cure. Persistence and clinical grit will win.

DR. LEONARD W. ELY, San Francisco: We have opened up a problem here whose solution will require a great amount of work and patience, and will demand the efforts, not of one man alone, but of a team. I would not have it thought for a moment that I regard my case as proved. What I do want recognized is, first, that this disease is entirely different from all the bacterial arthritides. This conclusion will be forced on any one who will take the trouble to cut up his material in the laboratory, and not throw it away because no money is to be made by its examination. Clinical experience rarely solves the hard problems in medicine. The second point I wish to make is that the tonsils and the deep urethra have nothing to do with this type of arthritis, and that the teeth have nothing to do with the first great type of arthritis—the bacterial type. This will save our patients from ruthless extraction of their teeth. The third point is not to attempt to have stool examinations done indifferently by a novice. We owe what advancement we are making at Stanford to the skill and interest of our laboratory chief—Dr. Wyckoff. The search for intestinal parasites is something that requires special training and great patience. I think that in this work we have struck a very important trail, and hope to follow it through to the end. The solution of the problem is probably tied up with that of Paget's deforming osteomyelitis, osteitis fibrosa, bone cysts, and possibly new growths. The chief thing, of course, is to find the organisms in the bone marrow.

OCULAR PHENOMENA PRODUCED BY INTRACRANIAL LESIONS INVOLVING OPTIC TRACTS NEAR THE CHIASM*

WALTER I. LILLIE, M.D.
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Cases of intracranial lesions affecting the chiasm have been studied in order to ascertain whether some ophthalmologic method of examination could be found to enable the ophthalmologist to determine more definitely the origin or position of the lesion.

The cases reported here have been classified into four groups, according to the origin of the lesion, in order to show the striking similarity in the ocular phenomena and the changes in the sella turcica as revealed by the roentgenogram. The four groups are:

Group 1. Pituitary tumors: (a) without glandular disturbances; (*b*) with acromegaly, and (*c*) with diabetes insipidus.

Group 2. Intracranial tumors, not of pituitary origin, affecting the chiasm.

Group 3. Nasopharyngeal tumors affecting the chiasm.

Group 4. Syphilitic basal meningitis affecting the chiasm.

In the series of forty-six cases of pituitary tumors, twenty-seven did not show glandular disturbances (Group 1 *a*, Fig. 1); seventeen were definitely acromegalic (Group 1 *b*, Figs. 2 and 3), and in two diabetes insipidus was found (Group 1 *c*, Figs. 4 and 5).

It is difficult to classify intracranial tumors not of pituitary origin, as there are so many types of lesions

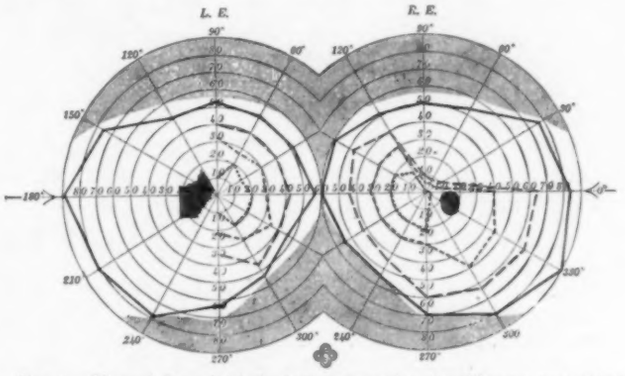

Fig. 1.—Normal form fields in both eyes with a 2 millimeter test object. Upper temporal quadrant defect for all colors in the right eye. Enlargement of the physiologic blind spot. Definite temporal hemianopia in the left eye for all colors. Marked enlargement of the physiologic blind spot.

and so many locations; yet all produce more or less typical changes in the chiasmal field. In the series of twelve cases, six of which have been previously reported,[1] the ophthalmologic changes were practically the same as those found in pituitary tumors (Figs. 6 and 7).

In all of the four cases of nasopharyngeal tumors, certain typical chiasmal field changes were present (Figs. 8 and 9).

In the two cases of syphilitic basal meningitis affecting the chiasm, the field changes were also typical of a chiasmal involvement (Figs. 10 and 11).

OPHTHALMOSCOPIC CHANGES

The ophthalmoscopic changes can be divided readily into four main divisions: (1) changes in visual acuity; (2) changes in the optic disk; (3) changes in the perimetric field, and (4) ocular motor changes.

Changes in Visual Acuity.—Practically all the patients in this series, regardless of the exact cause or location of the lesion, came to the clinic because of failing or loss of vision in one or both eyes. The duration of the visual changes did not vary to any great extent in the different types of lesions. At least there was not enough difference in the duration of the changes to make it pathognomonic of any one group. The loss of vision is usually slow, as shown by the histories obtained from reliable sources, except perhaps in the scotomatous types of field changes, which early encroach on the macular area. The gradual loss of vision is probably the reason so many patients do not consult a physician until definite hemianopia has developed, as usually a temporal quadrant still remains intact, or islands of temporal vision are still present. When the temporal fields are lost, the changes usually have encroached on a portion of the macular area, so

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* From the Section on Ophthalmology, Mayo Clinic.

* Abstract of thesis submitted to the Faculty of the Graduate School of the University of Minnesota in partial fulfilment of the requirements for the degree of Master of Science in Ophthalmology, December, 1922. The complete thesis was read before the Section on Ophthalmology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923, and will appear in full in the Transactions of the Section.

1. Lillie, W. I.: Ocular Phenomena in Cases of Chiasmal Lesions Not of Pituitary Origin: Report of Six Cases, Surg. Clin. N. Am. **1**: 1363-1380 (Oct.) 1921.

that the visual changes are noticed by the patient. The one point that stands out consistently is that the vision does not improve to any appreciable extent by refraction, even though there is an error of one or more diopters, either spherical or cylindric. In this series of cases, in which there was opportunity to study the changes of vision before and after operation, the improvement was always in the cases in which there was a normal fundus or pallor of the disks without loss of substance. Neither the visual acuity nor the fields in an eye that showed a definite simple optic atrophy improved to any appreciable extent following operation.

Changes in the Optic Disk.—The typical ophthalmoscopic appearance of the disks has been described by Benedict,[2] and the pallor without loss of substance is such a common finding that the expression should be universally used instead of the so-called primary optic atrophy so often recorded. This is in accord with the views of Walker and Cushing:[3]

> Despite the so-called atrophic pallor of the disks in patients having visual-field defects resulting from lesions in the chiasmal regions, the histologic examination of the nerves fails to show the expected degree of fiber degeneration unless the process has been of long duration.

Our cases serve to illustrate the fact that in the presence of chiasmal pressure of known long duration, associated with sharply cut hemianopias, even when to the ophthalmoscope the

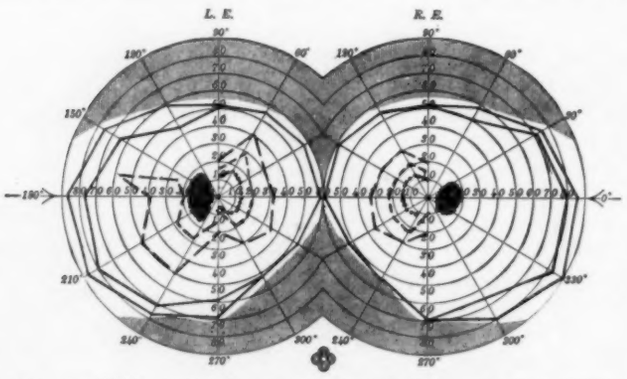

Fig. 2.—Slight contraction of the form field in the upper temporal quadrant of each eye with 2 and 6 millimeter test objects. Definite temporal hemianopia in the right eye for all colors. Definite hemianopia for red and green, with preservation of the lower temporal quadrant for blue, in the left eye. Bilateral enlargement of the physiologic blind spot.

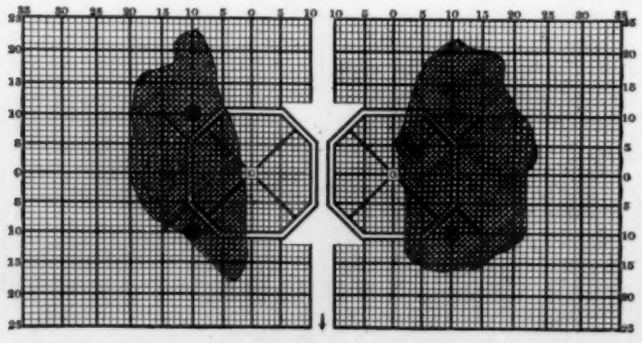

Fig. 3 (Same case as Fig. 2).—Definite bilateral enlargement of the physiologic blind spot recorded on Lloyd's stereocampimeter chart.

nerve shows the pallor of presumed atrophy, there may be no corresponding sharp delineation of the areas of atrophy in the cross section of the nerve.

2. Benedict, W. L.: Early Diagnosis of Pituitary Tumor with Ocular Phenomena, Am. J. Ophth. **3**: 571-584 (Aug.) 1920.
3. Walker, C. B., and Cushing, Harvey: Studies of Optic Nerve Atrophy in Association with Chiasmal Lesions, Arch. Ophth. **45**: 407-437 (Sept. 16) 1916.

When one stops to consider the frequency with which the perimetric fields improve or return to normal following the removal of the pressure at the chiasm, it is apparent that the loss of function is purely a "block" and not due to atrophy. In cases in which the pressure

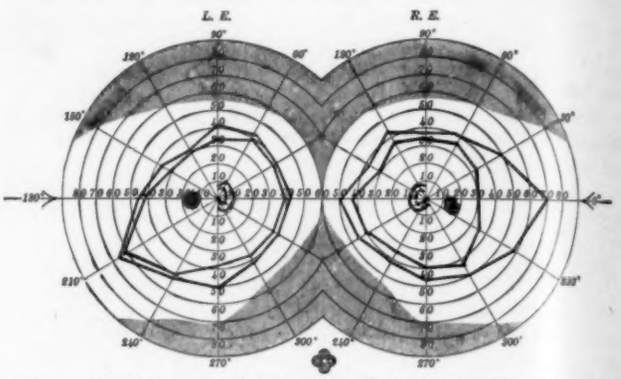

Fig. 4.—Marked temporal contraction of the form fields of both eyes with 1 and 2 millimeter test objects. Definite bitemporal hemianopia for blue and red, with complete loss of vision for green. Bilateral enlargement of the physiologic blind spot.

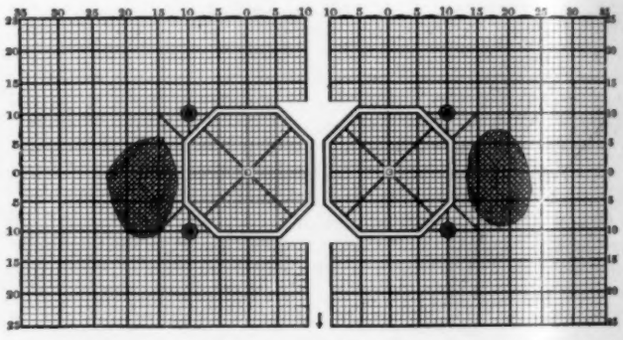

Fig. 5 (Same case as Fig. 4).—Bilateral enlargement of the physiologic blind spot recorded on Lloyd's stereocampimeter chart.

has been of such long duration as to produce a simple atrophy of the optic nerves, the perimetric fields do not improve following operation.

In many of the cases reported in this paper, the examinations following operation revealed improvement in the vision and perimetric fields of patients whose disks were originally reported "pallor without loss of substance"; while those whose disks were reported "simple optic atrophy" generally did not improve either in vision or in perimetric fields following operation. Again, in certain cases, the visual and perimetric field changes were out of proportion in respect to the appearance of the disks, especially in one case in which disks were normal and the vision was nil in each eye.

Changes in Perimetric Fields.—The perimetric field defects found in the cases reported here may be classified as follows: (1) bitemporal hemianopia, partial or complete; (2) homonymous hemianopia, partial or complete; (3) temporal hemianopia in one eye, complete loss of vision in the other; (4) quadrant defects, one or both eyes; (5) scotomatous field defects, and (6) normal fields.

Bitemporal Hemianopia: In thirty-two of the cases from all groups there was bitemporal hemianopia, either partial or complete. The hemianopia varied from color defect in one or both eyes, with an early enlargement of the physiologic blind spot, to more definite hemianopic color and form defects. Almost all known types of defects were found, and in some cases marked variation in the fields was noted on repeated examina-

tions. In nearly all the cases in which the blind spot was recorded, an enlargement was found. Some of the fields were within normal limits, except for slight quadrant defects in the green-color fields.

Homonymous Hemianopia: In seven of the cases there was the homonymous type of hemianopia, either partial or complete, varying from definite homonymous hemianopia for forms and colors to a homonymous defect for one color only. These defects also varied on repeated examinations.

Temporal Hemianopia: In ten of the cases there was temporal hemianopia in one eye, and complete amaurosis in the other. Varying degrees of contraction of the form and color fields were found, and in some, loss of one or more color fields.

Quadrant Defects: Four of the cases revealed quadrant defects in one or both eyes. These varied from small defects for one or more colors to a definite quadrant defect for form and color. Usually the enlargement of the physiologic blind spot encroached on the field of the color defect.

Scotomatous Field Defects: In twelve of the cases, definite scotomatous changes were noted. The scotomas were usually continuous with the physiologic blind spot; or, if the process had been of long duration, the quadrant or temporal loss of vision was continuous with the physiologic blind spot. Many varieties of

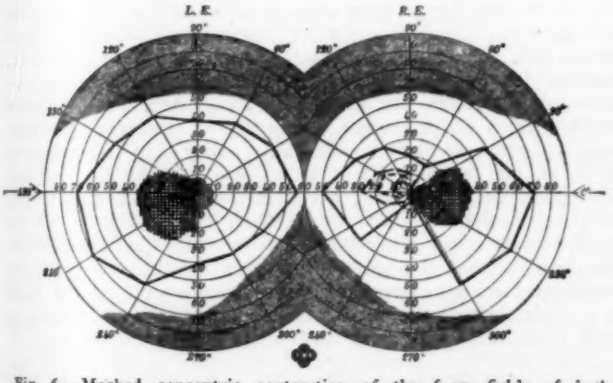

Fig. 6.—Marked concentric contraction of the form fields of both eyes with a 6 millimeter test object. Temporal hemianopia in the right eye with a 2 millimeter test object. The color field of the right eye reveals a definite temporal hemianopia. Color perception is lost in the left eye. The physiologic blind spots are markedly enlarged, and a small central relative scotoma is present in the left eye.

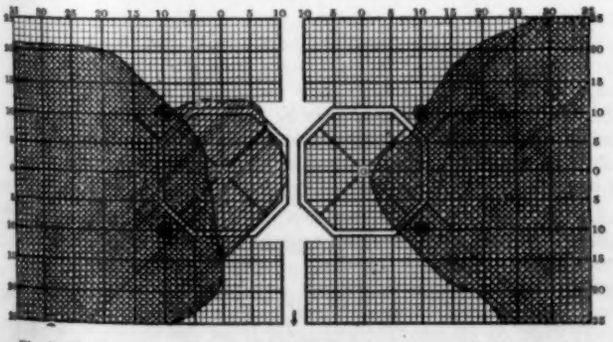

Fig. 7 (Same case as Fig. 6).—Bilateral enlargeme nt of the physiologic blind spot with a central relative scotoma in the left eye, recorded on Lloyd's stereocampimeter chart.

temporal defects for form and color accompanied the scotomatous changes. If the fields were taken often, the temporal return of vision usually preceded the shrinking of the scotoma. When the blind spots were carefully charted on the Lloyd stereocampimeter, they were found to be enlarged early in the course of the disease, and the temporal scotomas were always continuous with the blind spots. Also, in the fields in which there were temporal isles of vision, the loss of fields was continuous with the blind spots. This was not found in some of the earlier records and was prob-

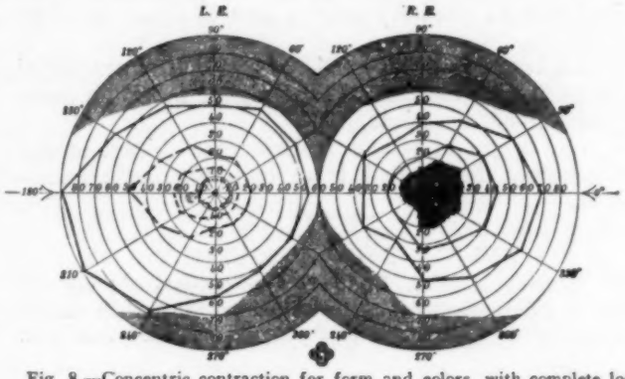

Fig. 8.—Concentric contraction for form and colors, with complete loss of vision for red and green in the right eye. A large central absolute scotoma includes the physiologic blind spot. Normal form and color fields in the left eye.

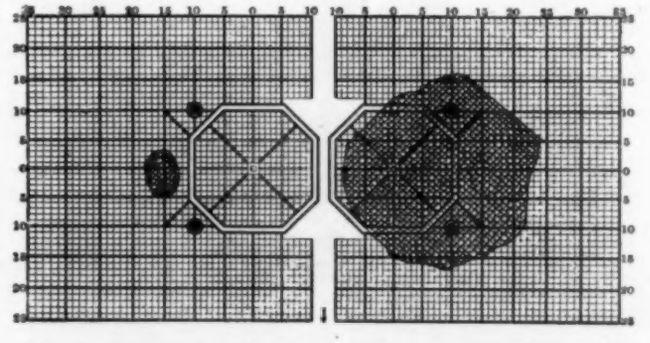

Fig. 9 (Same case as Fig. 8).—The large central absolute scotoma, including the physiologic blind spot in the right eye, recorded on Lloyd's stereocampimeter chart. The physiologic blind spot in the left eye is normal.

ably due to faulty technic. The reverse also seems to be true; with the return of visual fields, the enlarged blind spots and scotomas persist, while the form fields return more rapidly.

Normal Fields: In four of the cases, the perimetric fields were normal, both for form and color. Also, the blind spots were of normal size.

Ocular Motor Changes.—Ocular motor changes were less frequent except in the nasopharyngeal group. Any one or all of the ocular motor nerves may be involved, most commonly the sixth cranial nerve. In thirty of the cases, pupillary disturbances were noted, varying from a slow reaction to a complete internal ophthalmoplegia.

SUMMARY

The roentgenologic findings and ocular phenomena of the six groups are summarized and compared in Table 1.

CONCLUSIONS

1. All but four of the sixty-four patients had some change in visual acuity of one or both eyes.

2. The patients in whom the optic disks were normal in appearance, or who had pallor of the disk without loss of substance, obtained the greatest gain in visual acuity and perimetric fields following surgery.

3. In practically all cases the scotomatous field changes were, at one time or another, continuous with the physiologic blind spot, and the blind spot was almost

always incorporated in the temporal field defect, either for form or for color.

4. The presence or absence of color-field defects was as important as that of form defects.

5. The roentgenograms of the sella turcica were normal in a higher percentage of cases with intracranial lesions, not of pituitary origin, than in those of pituitary origin.

6. All persons suspected of having intracranial lesions affecting the chiasm should have thorough nasopharyngeal examinations.

7. The origin of lesions affecting the chiasm cannot be definitely determined from ophthalmologic examination.

ABSTRACT OF DISCUSSION

DR. GILBERT HORRAX, Boston: Any possible aid we can obtain in differentiating the type of tumors around the chiasm is naturally of immense importance. Tumors of this type,

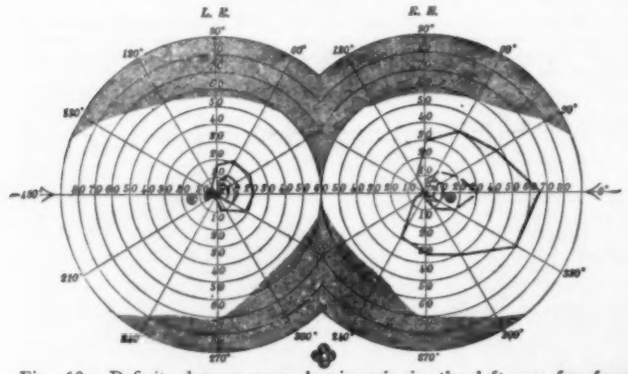

Fig. 10.—Definite homonymous hemianopia in the left eye for form and colors, with a small relative central scotoma.

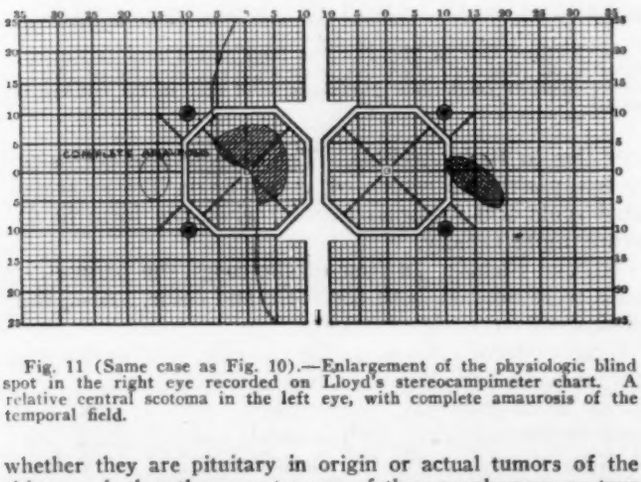

Fig. 11 (Same case as Fig. 10).—Enlargement of the physiologic blind spot in the right eye recorded on Lloyd's stereocampimeter chart. A relative central scotoma in the left eye, with complete amaurosis of the temporal field.

whether they are pituitary in origin or actual tumors of the chiasm, whether they are tumors of the nasopharynx or true adenomas, represent a large proportion of brain tumors, in Cushing's series about 25 per cent. The differential points from the appearance of the disks and the fields are the features that mainly interest ophthalmologists. Atrophy, with or without loss of substance, it seems to me is a term that is used in different ways. So far as the Brigham Hospital clinic is concerned, we cannot differentiate between atrophy with loss of substance and that without loss of substance. We do think we can distinguish between the type of atrophy occurring in tumors around the chiasm and the atrophy occurring in other types of disease—tabetic atrophy, or secondary atrophy following brain tumor. But atrophy with or without loss of substance we cannot differentiate to our own satisfaction, although Dr. Lillie believes this point to be of importance in prognosis. The prognosis, so far as we can determine, depends, chiefly, on how long a block there has been of the optic chiasm. The atrophy resulting from such a block may be complete in a short time, or it may go on for a long time. It is interesting that in charting the scotomas the field defects are always, in Dr. Lillie's experience, continuous with the physiologic blind spot. As to the type of hemianopia, the bitemporal type is more common than the homonymous type. The method of determining the extent of the field defects differs in different schools. We have given up using the color fields and rely on the small test objects designed by Walker, either on the perimeter or on the screen. We find that this gives us results comparable to what Dr. Lillie finds with his colors so far as determining an early hemianopic defect, which is, of course, the consideration of prime importance. The type of tumor that is giving us more trouble than any other in differentiation is the tumor of the optic chiasm itself. This is the group of tumors that Cushing and Martin reported recently in the *Archives of Ophthalmology*, a group that shows certain characteristic findings that separate them from the general group of tumors in this region.

DR. G. E. DE SCHWEINITZ, Philadelphia: Referring for the present to bitemporal hemianopia, associated, for example, with a tumor of the pituitary body, it is well known that the changes that take place in the field in typical instances are not individual types, but constitute stages of an advancing process, and are best studied with serial test objects. Beginning in the upper temporal field, the deformation proceeds downward, and from below upward in the nasal field, or, to use Traquair's description, "progresses round the fixation point clockwise in the right field and counterclockwise in the left." My own investigations confirm those of Traquair and some other observers that the attainment of the ultimate stages is about twice as common in the upper nasal quadrants as in the lower. Such typical development of the stages of progressing bitemporal hemianopia is not, of course, a constant condition. Naturally, departures from these types or stages are frequent, and other combinations are not uncommon. The instability of visual field boundaries in cases of pituitary body disorders, tumors, for example, is well known, and the homonymous hemianopic defects are also well recognized, but are now omitted from consideration. Paracentral scotomas are common and often an early manifestation; they may be bitemporal in form, and expand, as it were, into a large or complete bitemporal defect, meeting a contraction which begins in the temporal periphery. But even when there is little or no change in the upper outer peripheral temporal quadrant, alterations within the 30 degree circle may be observed, and the cecocentral region is recognized as a weak part of the field. It is probable that the very earliest changes are to be discovered over the blind spot, and may be continuous with it. Careful analyses of paracentral scotomas in these circumstances indicate that they also, like the general field, are divisible in quadrants; in short, that these scotomas, to use Traquair's expression, "behave like the general field." These scotomas, as also some of the other field changes, have been attributed to pressure foci in the optic pathways, to traction produced by a growing tumor, to vascular constrictions, which certainly are important factors, and possibly sometimes to a toxic influence on the macular fibers. So-called "typical development" of scotomas is, of course, not a constant one, and many deviations from types are recognized. Most, if not all, of the visual field defects can be detected with small white test objects; but even so, it is not wise to disregard the use of color tests, although the threshold of accuracy with white objects is greater than that of color tests.

DR. EMORY HILL, Richmond, Va.: I should like to ask Dr. Lillie what his experience has been in reference to the so-called "zones of deadened perception," mentioned a number of years ago by Wilbrand, which have not received much attention since. In charting the temporal field one brings in a large white disk, of 10 mm. for example, from the periphery toward the center. This will be recognized first merely as a moving object, but for some distance it is not recognized as a white object. In other words, a relative scotoma exists in the temporal field. This precedes a more definite loss of the temporal field, and in recovery the same thing occurs again—a zone of deadened perception in the periphery.

DR. WALTER I. LILLIE, Rochester, Minn.: One of the primary reasons for this paper is that there are many types of chiasmal field changes that are open to discussion. The reason I still continue to use color plates is that in different types of

intracranial lesions the mentality of the patient varies considerably. Some patients are more or less dull—and we can show defects much more readily with color than with small objects. When we first started to study the series, we had sixty-two proved cases out of 226 chiasmal lesions. The others we could not use because they were not proved, although they gave fields absolutely similar to those I have shown. The sixty-two cases were of various types, but they all showed practically the same type of field changes. The reason we began this study was to see whether we could not say definitely whether a lesion was from above coming down on the chiasm, or from below coming up. This we decided was impossible to show conclusively. We could show that there was a lesion affecting the chiasm, but the site of the lesion could not definitely be ascertained. Undoubtedly what Dr. Hill says is true, but that would be in the very early changes in the chiasm, and we have not found that in our series of cases. Most of our patients had been examined elsewhere, and field defects had been noted or had gone too far to give a simple relative scotoma. There is no question that you will find this scotoma or dimness of vision in any part of the field, depending on where the tumor is located. There is nothing new in the field changes we have presented, except that I want to emphasize that the earliest changes we have found are in the blind spots. The fields were absolutely normal for color and form, but the physiologic blind spot was enlarged. This has been found to be true in chiasmal lesions, and one can feel sure that it is not a case of retrobulbar neuritis.

A PROPOSED CLASSIFICATION OF IRITIS AND IRIDOCYCLITIS*

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The question may be asked with great propriety whether another classification of iritis and iridocyclitis is needed or even worthy of consideration. While it may be said that it is not demanded, yet some feel that it is desirable. This concerns, particularly, teachers, who are endeavoring to develop and drive home fundamental truths, but also clinicians, whose most difficult task is frequently diagnosis. Whatever contributes to orderly ways of thinking adds, not only to a better analysis of disease, but to more efficient treatment. Consequently, the subject should interest both teachers and practitioners.

That there is more or less confusion in the arrangement of uveal disease is evident from even a casual review of the various textbooks. That confusion should exist is quite natural because such correlations are the gradual outgrowth of the clinical manifestations of uveal disease as it has been observed since the beginning of medical time, rather than classifications largely based on the causal pathology. To express dissatisfaction is one thing, but to offer constructive criticism is quite another. Yet it does seem as if enough advance has been made to, at least, venture some sort of rearrangement to the end that teaching of uveal disease may be simplified, and possibly its etiologic estimation be brought more in line with established knowledge.

The manifestations of the disease may be classified in several different ways. The two methods of grouping commonly employed are based on its various clinical phases and on causal factors. Of the two, the latter seems more definite, rational and less subject to radical changes.

The continuity and histology of the uveal structures hardly admit of isolated processes in its component structures. There obviously cannot be an iritis without a cyclitis, or a cyclitis without an iritis or choroiditis. From a clinical standpoint, the symptoms of one may predominate and mask lesser changes in the other segments, so that from a practical standpoint separation is usual, depending on the dominant symptoms. It is to be understood, therefore, that when the terms iritis and cyclitis are used, they do not refer to an isolated process.

The possible cause of inflammatory changes in the iris and ciliary body must be due to one or a combination of the following:

Direct injury.
Micro-organisms in the tissues.
The toxic products of infection located elsewhere in the body.
Toxins—chemical or biochemical.
Anaphylactic phenomenon.

If a grouping is contemplated from an etiologic basis, one naturally turns to the laboratory for guidance. Despite the important and constructive experimental work of Stock, Guillary, Rosenow, Brown and Irons, Brown, Irons and Nadler, Lewis, Rosenow and Meisser (reported by Benedict), Woods, Straub, Verhoeff and Lemoine and others, its sum total is relatively little compared to the experimental work that has been done in other and less important medical fields. From a review of the experimental work that has been done by the various observers, certain conclusions may be drawn.

1. When the exciting agent of the uveal disease originates outside the body or the globe, it is borne to the uveal tissues by the blood and lymph streams.

2. The exciting agent travels either as fortuitous emboli, or by the white cells acting as phagocytes; or, if toxic, in solution in the blood or lymph stream.

3. Most inflammatory processes of the iris and ciliary body are due to the presence of organisms themselves in the tissues.

4. The varying degrees of inflammatory reaction depend on the virulence or attenuation of the infection, or to tissue resistance or to both factors.

Probably such terms as "idiopathic" and "primary" should be discarded because misleading and inappropriate. Disease of the uveal tract, in that it originates in the uvea itself, is never primary, but always secondary to disturbance elsewhere. Rheumatism should be confined to true rheumatic fever. The source of such disturbance is either from outside the body or from inside the body; consequently, the terms endogenous and exogenous, which have already been proposed, appear satisfactory.

Maxwell,[1] in 1916, proposed a classification of uveitis which furnishes a satisfactory working basis. Maxwell's contribution is largely drawn on in the following classification:

EXOGENOUS GROUP

1. Direct injury to the uveal structures which may introduce infection or may in the case of foreign material produce chemical irritation (copper, etc.).

ENDOGENOUS GROUP

1. Specific infectious diseases:

syphilis	malaria	the acute exanthems
gonorrhea	pneumonia	true rheumatic fever
tuberculosis	typhoid	septicemia, etc.
influenza	typhus	

2. Focal diseases:

conjunctival infections	skin infections (furunculosis)
tonsil infections	gallbladder infections
alveolar infections	appendical infections
accessory air passage infections	areas of infection wherever located
	sympathetic ophthalmitis(?)

*Read before the Section on Ophthalmology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

1. Maxwell, M. E.: Ophthalmoscope, September, 1916.

3. Toxins:
   A. Autointoxications:
      intestinal putrefactive processes
      menstrual disturbances
      endocrine disturbances—hypothyroidism, etc.
   B. Chemical — Proteins—lens
      Biochemical — sympathetic ophthalmitis (?)
4. Disorders of general metabolism:
   gout
   diabetes
   anemia
5. Anaphylaxis of the uvea:
   sympathetic ophthalmitis (?)

It will be noted that the endogenous group has been divided into five divisions under which the various clinical phases of iritis and iridocyclitis have been placed. Great difficulty is encountered in correlating some of the types because the causal factors are as yet at most, speculative.

The important and well recognized rôle which injury and exposure play is regarded as contributory rather than directly causal. The same may be said of previously existing disease. Certainly, these and possibly other factors reduce the resistance of the parts and possibly sensitize the tissue to organisms and perhaps toxins, which in some instances have a developed affinity for uveal structures. There are certain clinical expressions of iritic inflammations which, according to the present state of information (or lack of it), cannot be accredited to infections. Into this class fall three groups: toxins, disorders of general metabolism, and anaphylaxis of the uvea.

The experimental work of such men as Uhlenhuth, LaGrange, Hektoen, Straub, Woods, Verhoeff and Lemoine, point to the existence of specific toxins. Similarly, the coincidence of uveal disease appearing at the menopause in women, and when associated with probable disturbances of the endocrine balance, has made it appear admissible to place these under a toxic group. Also into this group has been placed intestinal intoxications. That intestinal intoxication plays an important rôle in iritis and iridocyclitis is the conviction of such an astute observer as de Schweinitz. Whether this rôle is contributory or causal is a mooted question. There is strong clinical ground for a separate group due to disturbances of general metabolism, such as gout, diabetes and possibly anemia, in which no specific infection or infective groups have been thus far identified. The question of uveal anaphylaxis is certainly an important and not altogether clear one. Possibly it should not have a separate head. It may be that future investigations will show that anaphylaxis is an equally important factor in all types of uveal disease, one having primarily to do with tissue sensitization and specificity of the exciting agent. In the case of three groups, toxins, general metabolic disturbances and uveal anaphylaxis, future work may show that the various causal factors are, after all, only contributory, merely lowering uveal resistance to organisms normally present in the blood stream.

There is less difficulty in establishing a classification than there is in knowing into which particular category to place certain well defined clinical entities, the precise cause of which has not as yet been established. However, this classification is proposed as a working basis and not because it is considered ideal or final. Any estimate based on imperfect knowledge is sure to be correspondingly faulty and inaccurate. Consequently, what is written today will probably need to be rewritten tomorrow. No attempt has been made to give credit in most instances to sources. In many cases, it is quite impossible to identify the originator of a certain nomenclature.

It is hardly necessary to add that none of the work is original except the arrangement of the material which has been gleaned from many sources.

THE ETIOLOGY OF IRITIS

SECOND SERIES *

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AND
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This is a continuation of the study of iritis, of which a series of 100 cases was reported in 1916. The present report includes 100 cases which have been studied by the same methods as in the previous series. These included a careful history and physical examination to determine the presence or absence of syphilis, tuberculosis, gonococcal infection, and infections of the teeth, tonsils, sinuses, prostate, pelvis, or other structures which might give rise to metastatic lesions in joints or eyes. The possibility of invasion of the body by infection entering through mucous membranes without previous residence in a local lesion in the body was considered, and will be discussed below. Laboratory examinations included Wassermann tests, usually controlled by a second laboratory, complement fixation tests for gonococcal infection, roentgenograms of the teeth and sinuses, and of the lungs when there was any question of pulmonary disease. Blood counts and blood cultures, and subcutaneous tuberculin tests after previous determination of sensitiveness by cutaneous tests, were made in suitable cases.

Each patient presents a problem for solution, the ascertainable facts being the history, including the time relations of the onset and recurrence of iritis and infectious processes of the several kinds, the results of physical examination and laboratory study, and the results of treatment directed to the removal or cure of the infections discovered. It is a matter of general experience that the relations of cause and effect may be readily demonstrable in some cases, while in others, several possible causes are present and it may be impossible to state which infection was immediately responsible for the lesion in the eye. Except in the simplest cases, there is thus unavoidably introduced an element of judgment as to which of two or more infections was the cause of the iritis. We have tried to maintain a conservative attitude in drawing conclusions, and when there was reasonable doubt as to which of several causes was responsible, we have placed such cases in the group of combined infections.

The hundred cases in this series are grouped in Table 1, under their probable causative infections so far as the available evidence made this possible.

In patients in whom one infection seemed to be definitely related to the iritis, but in whom the presence of other infections was disclosed by routine examination, the latter infections appear under their appropriate headings—coincident infections. In two cases, a thorough examination failed to demonstrate any infectious process; it is entirely possible, however, that some local infection was missed, or infection may have entered

* Read before the Section on Ophthalmology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

through apparently intact mucous membranes. We have considered also the possibility of some other non-bacterial etiology of the iritis in these two cases, although one of the former explanations seems to us more probable.

UNDETERMINED GROUP

Seven cases in which evidence of infection was found, but in which the relation of infection to iritis was not clear, require mention. In one there was a positive Wassermann reaction, no history or evidence of syphilis, and the iritis improved slowly under antisyphilitic treatment; in a second there was a positive Wassermann reaction and urethral strictures; in a third, a positive Wassermann reaction without other evidence of syphilis, and gonorrhea five years and arthritis eighteen months previously. A fourth patient had extensive pyorrhea without apical abscesses, and subacute cystitis in which carefully made cultures after cystoscopy remained negative; in a fifth case an extensive pyorrhea was the only lesion found; in a sixth case there was some evidence of tonsillar infection only, but circumstances did not permit of a clear demonstration of its relation to the iritis. In a seventh case the only evidence of infectious process found was a positive tuberculin reaction after subcutaneous injection. Some of these might be included in one of the infectious groups, but for statistical purposes we have felt that it is better to place them in a group with claims more in keeping with the indefiniteness of the available evidence.

SYPHILIS

The search for syphilis included a careful history, physical examination for clinical evidence of syphilis, and Wassermann tests usually controlled by two laboratories, and by repeated tests in all cases. In fifteen cases (two private and thirteen clinical), syphilis seemed clearly the cause of the iritis. In six of these there was gumma of the iris. In three, syphilis was the only infection present; in twelve others, infections, chiefly dental and tonsillar, were present, but collateral evidence, such as presence of gummatous iritis, and active syphilis elsewhere and prompt healing under antisyphilitic treatment without other intervention, indicated a syphilitic etiology. In addition to these fifteen cases in which syphilis was concluded to be the cause of the iritis, evidence of syphilis, usually a history of syphilis years previously, or a controlled positive Wassermann reaction was found in fourteen other cases. These included seven cases in the combined groups in which evidence of syphilis was associated with other infections of the sinuses, tonsils and teeth, and tuberculosis or gonorrhea. In some of these, syphilis may have been the cause of the iritis; in others, the iritis resisted antisyphilitic treatment, and sometimes yielded after removal of other infections. Syphilis cannot be excluded as a cause of the iritis in the cases of the undetermined group in which the Wassermann test was positive. In the four cases of the tonsillar group in which positive Wassermann tests were obtained, there was no other evidence of active syphilis.

In this series there were twenty-nine cases in which syphilis was present; of these the iritis was syphilitic in origin in fifteen, and possibly syphilitic in some of the remaining fourteen cases. The percentage of cases of syphilitic iritis in this series is thus not over 25, and probably somewhat less. A comparison of our results in this series with those of the 1916 series, in which evidence of syphilitic infection was found in thirty-nine cases, and in which 23 per cent. of the iritis was due to syphilis, is of interest in relation to the question of the importance of syphilis as a cause of iritis, and also in relation to the importance of the source of material on which statistics of any kind are based. Unrecognized and untreated syphilis is more frequent in dispensary than in private practice. The proportion of private to dispensary cases was greater in the present than in the 1916 series, and in addition it happened that more cases were referred to us from the venereal wards of the county hospital prior to 1916 than subsequently. These factors, no doubt, have tended to decrease the proportion of syphilitic iritis in the second series. Combining the first and second series in which the cases are approximately half private and half clinical, over a period of ten years, evidence of syphilis was found in 34 per cent., and the iritis was clearly due to syphilis in 19 per cent. Syphilis was the cause in 200 cases in probably not more than 25 and in a much smaller percentage of cases in private practice. These figures are regarded as important, not alone from the standpoint of therapy, but because of their sentimental importance to the sufferer from iritis. It is, no doubt, true that statistics obtained solely from a municipal hospital including venereal wards would show a higher proportion of syphilitic iritis; but even in such a group, a complete survey of each patient would be necessary to exclude other infections, for there is no reason why a patient infected with syphilis should not suffer from iritis of other cause.

TABLE 1.—*Infections Found in One Hundred Cases of Iritis, Series of 1923*

Infections	Alone	With Other Infections	Total	Coincident Infections: Syphilis	Gonococcal	Tuberculosis	Dental	Tonsillar	Sinus	Nonvenereal Genito-Urinary	Other Infections
Syphilis	2	13	15	..	..	1	8	9	2	..	..
Gonococcal infection	1	..	1	..	..	..	..	..	..	..	..
Tuberculosis	..	..	..	..	..	..	..	..	..	..	..
Dental infection	5	4	9	..	..	..	..	2	2	..	..
Tonsillar infection	19	18	37	4	..	2	15	..	1	1	1
Sinus infection	..	1	1	..	..	..	1	..	..	..	..
Genito-urinary, nonvenereal	3	..	3	..	..	..	..	..	..	..	..
Other infections	1	..	1	..	..	..	..	..	..	..	..
No infection found	..	..	2	..	..	..	..	..	..	..	..
Combined infections	..	24	24	7	3	4	19	22	10	..	5
Undetermined	..	7	7	3	..	1	2	1	..	..	2
Total			100								

GONOCOCCAL INFECTION

Iritis from gonococcal infection was present in one case in the absence of other demonstrable infections, and associated with multiple arthritis and prostatitis, and gonococci in the urethral discharge. Active gonococcal infection was present also in three other cases in the combined group. In one there was a recurrent arthritis, syphilis, pansinusitis, alveolar abscesses and chronic tonsillitis; in a second, recurrent arthritis, pulmonary tuberculosis, dental infection and tonsillar infection; in a third, arthritis with prostatitis, syphilis, and dental and tonsillar infection. A gonococcal origin of the iritis would have to be considered in these, particularly in view of the recurrent arthritis, which in two was clinically like gonococcal arthritis. The presence of other active infections, however, does not allow the concluding that the iritis was certainly gonococcal in

origin. The number of cases in which there was gonococcal infection is much smaller than in the series of 1916, in which there were nine cases in which the iritis occurred in close association with gonococcal infection, in seven without other infections, and in two with other infections. It was noted in the previous report that the seemingly large number of cases of gonococcal iritis was probably due to the fact that one of us was studying gonococcal arthritis, and that chances of meeting with other gonococcal metastases, including iritis, was thereby much increased. During the period since 1916, we have seen much less gonococcal arthritis, and this fact, together with the decrease in the number of patients referred to either of us from venereal wards, may well account for the smaller proportion of gonococcal iritis in this series.

TONSILLAR INFECTION

The evidence on which a diagnosis of tonsillar infection has been made are recurrent attacks of tonsillitis, evidence of chronic infection such as the expression of pus, with associated redness of the anterior pillars, and chronic enlargement of the regional lymph nodes. The presence of cheeselike plugs in the tonsillar crypts has not been alone regarded as evidence of chronic infection in this or the previous series. We have had the assistance of expert and, we believe, conservative advice of specialists in diseases of the nose and throat in the diagnosis of these cases.

Tonsillar infection was present alone with iritis in nineteen cases, and in eighteen others with other infections. Evidence of tuberculosis was found in two cases, nonvenereal genito-urinary infection in one, and sinus infection in one. A positive Wassermann test without other evidence of active syphilis was found in four. Chronic tonsillar infection was present also in twenty-two of the combined group, in which it was impossible to ascribe the iritis to any one of the several infections present.

DENTAL INFECTION

Nine cases of iritis were apparently due to dental infection (alveolar abscesses). Five of these were unassociated with other infections. In each of four others, tonsillar and sinus infections were found. Alveolar abscesses were found in forty-three other patients, of whom eight were in the syphilitic group, fifteen in the tonsillar group, one associated with sinus infection, and nineteen in the combined group. In two cases in the undetermined group, there was an extensive pyorrhea without alveolar abscesses. It is possible that these two should be regarded as iritis of dental origin, although it has not been our experience that pyorrhea is often associated with metastatic lesions. The serious influence of pyorrhea in some cases on the general health is, of course, not questioned. The large proportion of alveolar abscesses, in which chronic tonsillar infection is also present, and the relatively small number in which alveolar abscesses occur alone gives weight to the view, advanced by dentists of wide experience, that in many instances in which alveolar abscesses and chronic tonsillar infections occur together, the alveolar abscess is as truly a secondary infection as is iritis or arthritis. It is common experience that the removal of an alveolar abscess in a patient with chronic tonsillar infection frequently fails to prevent the recurrence of metastatic infections. These views have undoubtedly affected our opinion in each case studied, so that in the present series we have nine cases in which we believed the dental infection to be the cause of the iritis, as against thirty-seven due to tonsillar infection. We have also been influenced by the subsequent course of the iritis and freedom from recurrence following removal of the alveolar abscesses and chronically infected tonsils. Except in emergencies in which iritis occurred in persons whose vision had been lost in the other eye, we have counseled conservatism in dealing with teeth in which there was doubtful evidence of infection of minor degree, and have regularly availed ourselves of abundant expert dental consultation.

SINUS INFECTION

In determining the presence or absence of sinus infection, in addition to the evidence obtainable from the history, a routine examination of the nose was made together with transillumination tests, and roentgenograms in a majority of the cases. In all cases in which there was any question of sinus infection, the patients were carefully examined by specialists in this department of medicine, and the diagnosis was confirmed in positive cases by the demonstration of pus and other evidence of infection.

Infection of the sinuses was found in fifteen cases. In one in which there was a severe pansinusitis associated with two alveolar abscesses, the sinus infection was regarded as the source of the iritis. Sinus infection was found also in two cases in the syphilitic group, in two cases in the dental group (maxillary sinusitis), and in ten cases in the combined group, usually associated with infections of the tonsils or teeth. In the combined group in which multiple areas of infection were present, the sinus infections undoubtedly contributed to the load of infection of the patients, and in some instances may well have been the portal of entry of the infection which gave rise to the iritis; but the presence of the other infections suggested as preferable the inclusion of these cases of sinus infection in the combined group. In the total of 200 cases, infection of the sinuses was found in twenty-two cases.

TUBERCULOSIS

We have not encountered any cases in this series in which the iritis was clearly associated with tuberculous infection. Evidence of tuberculosis, either on physical examination or from tuberculin reactions or both, was found in eight cases. In one case of syphilitic iritis there was a chronic active apical tuberculosis; in two cases due to tonsillar infection there was a positive tuberculin reaction without other evidence of active tuberculosis; in two cases in the combined group, there were physical signs of old pulmonary tuberculosis with positive tuberculin reactions; in another, tuberculous cervical glands; and in a fourth, a positive tuberculin reaction without other clinical evidence of active tuberculosis. In one other case classified as undetermined, a positive tuberculin reaction without other clinical evidence of tuberculosis was found. In none of these did there appear to be a clear relation between the iritis and the tuberculosis.

NONVENEREAL PROSTATITIS

In three cases, a subacute prostatitis was the only infection found. In one there was an old history of gonorrhea twenty years previously which had healed without immediate complications and without stricture. There was no subsequent history of venereal infection, and examination and a thorough search by the urologist failed to show any evidence of gonococcal infection.

In one case the iritis healed after prostatic massage. Two years later, following severe physical strain and

much driving in an automobile over rough roads, the prostatitis recurred with a slight urethral discharge. There had been no exposure to venereal infection, and the transient discharge contained no gonococci. With the prostatitis and arthritis there was a recurrence of iritis.

MUCOUS MEMBRANE INFECTIONS

Recent studies of recurrent acute and subacute metastatic infections, of which acute and subacute arthritis and iritis of the type under discussion are examples, suggest that, while probably the majority of cases are due to infections resident in some locally infected tissue, there is a group in which the infection enters directly through the mucous membranes without previous prolonged residence in the body.[1] Inflammation of the mucous membranes of the nose and pharynx is sometimes followed by arthritis, in persons in whom previously existing local infections were not demonstrable. In one of our patients, otherwise apparently free from demonstrable localized chronic infections, the iritis followed a "cold in the head." In this case, the coexistence of an acute sinusitis cannot be excluded; but insistence on this point is perhaps more academic than practical.

There are a number of case reports in the literature in which the iritis is attributed to intestinal infection and intoxication. A review of these reports suggests that, while in some the gastro-intestinal symptoms were probably merely secondary effects of infection, the true source of which remained undiscovered, in others the possibility of bacterial invasion from the intestinal tract must be considered. The number of such cases is probably relatively small; and, since in the individual case the diagnosis is largely a matter of exclusion of other sources, there is required a thorough examination, and demonstration of the absence of all other more common sources of infection, before a diagnosis of iritis of intestinal origin can safely be made. From a review of experimental evidence in animals,[2] it appears that while infection may enter the body through presumably intact intestinal mucosa, under normal conditions of health the intestinal wall must offer a fairly effective barrier to the passage of bacteria from within its lumen. In man, it is conceivable that under conditions of greatly depressed resistance, bacterial invasion by organisms of low virulence might occur, with the production of metastatic lesions without continued bacteremia. This seems to be the case in certain ulcerative diseases of the intestine. In ulcerative colitis, there sometimes occur exacerbations with fever, with demonstrable transient bacteremia, and occasionally arthritis; and, presumably, iritis might originate in the same way. In one of our patients (in the combined group) with recurrent iritis of many years' standing, in whom infections of the tonsils, sinuses and teeth had been successively discovered and removed, the iritis continued to recur along with exacerbations of a chronic colitis. On the other hand, several patients with iritis gave a history of associated intestinal disturbance, but examination disclosed other and apparently definite infectious processes to which the intestinal complaints were probably secondary.

COMBINED INFECTIONS

In approximately two-thirds of the cases in the present series, there was more than one area of infection. The frequent coexistence of chronic or recurrent tonsillar infection, alveolar abscesses and sinus infection has already been referred to. In a number of patients, in addition to these infections, there was found also syphilis, gonococcal infection and tuberculosis. Multiple infections no doubt have a cumulative effect in reducing the resistance of the patient, and in such persons a conclusion as to which infection is responsible for the iritis may be difficult or impossible. The successful eradication of one infection may remove a sufficient amount of the load so that the patient ultimately recovers from the others, and, under such circumstances, conclusions as to the etiology based on the results of treatment must be guarded. In twenty-four cases, ten private and fourteen dispensary, in which there were multiple infections, we were unable to determine with certainty which infection had given rise to the iritis.

RESULTS FROM OPERATIVE PROCEDURES

Following the removal of infected tissue, such as chronically infected tonsils, there may be a steady improvement in the eye and ultimate recovery without recurrence of the iritis, and the inference seems reasonable that the tonsillar infection caused the iritis. In another case, the removal of the tonsils is followed by a more striking and sudden improvement in the eye within from twenty-four to forty-eight hours. This improvement may be permanent, in which the inference as to tonsillar causation may be warranted, or in a few days the iritis recurs. The immediate improvement is apparently similar to the startling but often temporary improvement seen in arthritis, and also in iritis following the intravenous injection of foreign protein; it is probably nonspecific, and may be misleading, in that the procedure which gave rise to the prompt effect may be given undue credit as evidence as to the cause of the iritis.

TABLE 2.—*Infections Found in Two Hundred Cases of Iritis, First and Second Series, 1916 and 1923*

Infections	Alone	With Other Infections	Total	Coincident Infections: Syphilis	Gonococcal	Tuberculosis	Dental	Tonsillar	Sinus	Nonvenereal Genito-Urinary	Other Infections
Syphilis	12	26	38	..	8	6	13	10	3	..	..
Gonococcal infection	8	2	10	..	..	..	1	1	..	..	..
Tuberculosis	8	..	8	..	..	..	..	..	..	..	..
Dental infection	12	15	27	2	2	2	..	9	3	..	..
Tonsillar infection	26	27	53	5	3	4	22	..	1	1	1
Sinus infection	1	3	4	..	..	..	2	1	..	..	..
Genito-urinary, nonvenereal	6	..	6	..	..	..	..	..	..	..	..
Other infections	3	..	3	..	..	..	1	..	..	..	..
No infection found	..	..	3	..	..	..	..	..	..	..	..
Combined infections	..	41	41	15	12	11	27	35	15	1	5
Undetermined	..	7	7	3	..	1	2	1	..	..	2
Total			200								

AGE

The youngest patient in this series was 13 years old, the oldest 69 years. The average age was 35 years. With the exception of the 13 year old patient, a girl, well developed for her age, whose iritis healed promptly and permanently after the removal of infected tonsils, there were no cases of iritis in either series in children. Among the factors which suggest themselves in explanation of this apparent infrequency of iritis early in life are the infrequency of small areas of long-standing

1. Irons, E. E.: Some Less Frequently Considered Portals of Infection in Arthritis and Iritis, J. A. M. A. **80**: 1899 (June 30) 1923.
2. Moody, W. B., and Irons, E. E.: J. Infect. Dis. **32**: 226 (March) 1923.

infection, such as alveolar abscesses, and the reputed greater activity of lymphoid tissues of the pharynx, tonsils and lymph nodes in resisting infection, in the young as compared with adults. In children, the sinuses are relatively small and undeveloped, and also gonorrhea and acquired syphilis are less frequent than in the years after puberty. It may be noted also that, with the exception of the arthritis of acute rheumatic fever, arthritis is relatively less frequent in children than in adults.

THE FIRST AND SECOND SERIES COMBINED

In Table 2 we have combined the cases of the first and second series. The incidence of the several types and areas of infection in the two series has already been compared in the discussions of the different infections. In the comparison of infections found in these two series, differences are evident, some of which are easily accounted for by known differences in the sources of material, and it is probable that another hundred cases would further modify the percentages of the several etiologic groups. These figures are presented, therefore, not in an attempt to establish the exact frequency of occurrence of the several causes of iritis, but rather as a recital of what infections we found in these 200 patients.

122 South Michigan Avenue.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. FRANCIS, AND IRONS AND BROWN

DR. C. D. WESCOTT, Chicago: I agree with Dr. Francis that a better classification of iritis and uveitis based on etiology is very desirable. I doubt whether it is possible in the present state of our knowledge to formulate one that will be satisfactory. The one suggested by Dr. Francis seems to me not sufficiently simple and in part untenable. The relation of malaria to iritis, for instance, is very uncertain. I have never seen iritis in true rheumatic fever, and I do not know what causes rheumatic fever, nor do I know the cause of scarlet fever; but the iritis which is sometimes a complication might easily be due to the streptococcus which is so often found in the throat in such cases and has no other relation to the scarlatina. Our knowledge of the relation of intestinal toxemias to uveitis is still indefinite, and the eye complication might be due to associated infection not easily discovered. This is also true in gout, diabetes, "anemia," typhoid and other diseases. The work now going on in the study of anaphylaxis and sympathetic inflammation is extremely important, but, so far, it seems to me, inconclusive. Dr. Francis' classification is certainly very suggestive; but it would be better not to adopt it just yet as the consensus of this section. Dr. Brown and Dr. Irons deserve the thanks of the section. Their study, which, it will be recalled, was initiated for the purpose of discovering, if possible, the cause of "rheumatic iritis," has demonstrated rather conclusively that "there ain't no sich animile"; and the term "idiopathic iritis" may, with propriety, be quietly interred. While this second paper establishes more conclusively the facts brought out in their first communication, the authors have shown that statistics and percentages in regard to the etiology of iritis will always depend somewhat on the source of the material studied and this must be true in regard to the etiology of many conditions. The authors are to be commended for their eminently fair and conservative attitude throughout these studies. I wish to take this opportunity to acknowledge my indebtedness to Dr. Irons for his assistance in the general study of some of my cases.

DR. CLARENCE A. VEASEY, Spokane, Wash.: Since the papers of Alexander and others, published a generation ago, in which from 60 to 75 per cent. of all cases of iritis were attributed to syphilis, our views concerning the etiology of this affection have undergone many radical changes. The work of Rosenow and others on the importance of focal infections and specific strains of micro-organisms in the production of many affections throughout the body, and that of the authors of this paper concerning the etiology of iritis, has done much to clarify our views and place them in a much better scientific position. As to the percentages of iritis due to any given infection, there must always be some difference of opinion according to the class of patients from which our statistics are drawn. Public hospital cases, and especially hospitals with venereal wards, naturally must give a larger number of cases of iritis due to venereal infections than statistics derived only from private practice. This is especially true if the private practice is among the better classes who have inclination, knowledge, opportunity and means of taking better care of themselves. In my experience (after excluding syphilis), chronic infected tonsils have been the most frequent source of the foci of infection. The tonsils may be the sole seat of infectiton or may be accompanied by dental or other infections. The suggestion referred to in the paper, that many dental infections may be secondary and due to tonsil infections, is a very important one and should be investigated carefully. In comparatively few cases will a single focus of infection be discovered. Most of the cases are mixed infections. The possibility of a pyorrhea or of an intestinal infection being the primary focus must not be overlooked. One must not put too great dependence on roentgenograms, if they are negative. Too frequently it has been found that a sinus reported negative from the roentgenograms contained pus, and that a tooth, also reported negative, showed, when extracted, an apical abscess. Roentgen-ray examinations, when positive, are of great corroborative value, but, when negative, do not always exclude the possibility of an infection existing in the parts. The clinical examination must be our chief guide. The laboratory findings are adjuncts. In operative procedures, many curious effects are observed. Within a month I have observed one case of plastic iritis that resisted the ordinary methods of treatment, and in which the advice of removal of the infected tonsils was declined for ten days. It cleared up entirely within forty-eight hours after the removal of the tonsils, the eye in that time becoming as white and as quiet as the fellow eye. On the other hand, a patient under my care for many years for recurrent attacks of iritis, in whom double iridectomy had been performed and from whom all sources of infection were thought to have been removed, had a severe iritis within twenty-four hours after the removal of a tooth clinically suspected, and the removal of which revealed an apical abscess. The same thing has occurred when the removal of infected tonsils has been quickly followed by an inflamed joint.

DR. T. B. HOLLOWAY, Philadelphia: At the present time we are in the midst of considerable confusion in regard to the etiology of uveitis. The authors have found syphilis a factor in 19 per cent. of their cases; Lang found only 6 per cent. in his private practice. On the other hand, Campbell showed 70 per cent., and Clapp had 80 per cent. Many of Clapp's patients were colored, and a definite percentage showed condylomas. When one compares these figures, is it any wonder that the young man of today becomes confused? As to the tonsils, my own experience is somewhat at variance with that of the authors. For years I have had all of my uveitis cases gone over in much the same way as has Dr. Brown, probably not quite so thoroughly, or shall I say, consistently thoroughly. It is extremely difficult to have all of these examinations made in every case. But the tonsils have not figured with me to the same extent that they have in these statistics. I am also somewhat reluctant to accept the statement that the dental conditions are secondary to the tonsil infection, particularly in older people. It seems to me that pyorrhea, dental abscess and alveolar atrophy are apt to come on in middle life or later years when other organs and functions are undergoing a retrograde process, and, as is well known, may set up distant infectious processes. I should be a little reluctant to accept that statement in toto. Another interesting factor is the relation of the toxins to this condition. At the Boston session, de Schweinitz quoted Flexner as stating definitely that we know nothing at all in regard to the toxins of the pyogenic

cocci; that they cannot be found in anything more than minimum amounts in artificial cultures. Another interesting point is the question of focal infection. Is the onset of the iritis dependent on the turning over of the soil prior to the bacterial invasion, or is it dependent on a selective affinity for certain tissues, as put forth by Rosenow? It is interesting in this respect to point out that Lyons of England in 1916 stated that he believed the bacteria and toxins prepared the ground, but that some trauma, however minimal in degree, was necessary to induce the iritis. Quite in contrast with this, and yet working along similar lines, Flexner takes the opposite view. He believes that trauma, however minimal in amount, is the preparatory step, and that subsequently the bacterial invasion occurs. I have always looked on the last series of 100 cases studied by Drs. Brown and Irons as the most reliable study made in this country, and I know of no statistics from foreign clinics that we can rely on to a greater extent. I do want to point out, however, that even in these statistics much depends on the race, careful study, observation and treatment, and on the interpretation of the findings in these cases. Still further, I dare say that if the authors were to transfer their work, even in Chicago, to a different center, they might possibly arrive at some different conclusions.

DR. LLOYD MILLS, Los Angeles: It will be noted that the combination of cases in which no infection was found, and of the undetermined cases, forms 9 per cent. Anything, therefore, that will tend to reduce the obscurity covering that undetermined element in iritis should be accepted with interest. About a year ago, I had at one time three intractable cases of iritis. In each case the patient had been treated by other men for a long time. Two had come from the Middle West, one from San Francisco, and in each case they had reached the point of near blindness. It was a question of examining the body in every possible way to find out some other possible source of infection. The patients were put into the hands of a good internist, who found nothing new in the way of foci of infection. Tonsils and teeth had been eliminated, nasal sinuses had been eliminated, and every other possible source of infection. As a last resort, thinking there was something back of these cases because the patients were sallow and complained of lassitude and constipation, I sent them to another internist. He found that each of these patients harbored *Endameba histolytica* in the stools; with the first injection of emetin, these eyes, which had been red and absolutely impossible to control by any other means, began to make definite improvement. One of these patients, who has been under observation for eight months, recovered perfectly after a severe fight; two others are still under treatment and are improving. At the same time, in that curious way which unusual cases have of coming in groups, two cases of intractable corneal ulceration came to me. I found *Endameba histolytica* in one case and *Craigia* in the other as the source of infection. The patients have recovered. This work was further confirmed by Barraquer of Barcelona. In the first similar case that I saw with him, we found amebas, and the first injection reduced the redness of the eye. The patient is still improving under treatment. This work should be confirmed, and the means of confirmation are simple. If the relation is confirmed, we shall have to include in our nomenclature the term protozoan iritis as well as that of protozoan keratitis. I would suggest, if any cases can be found which go on, as did my first case, to intractable glaucoma in one eye, that careful section of such an eye might wholly clear up the question of the actual invasion of the tissues by protozoa, a question which is still under discussion, and which would go far to aid the internists on this important question.

DR. F. PARK LEWIS, Buffalo: Shortly after Rosenow demonstrated the affinity of certain organisms for special tissues, it occurred to me that it would be well to see whether the same fact held good in intra-ocular inflammations. A case of malignant iritis coming under my observation gave an excellent opportunity for making this study. After the elimination of every other possible source of infection, a roentgenogram showed the presence of an apical abscess. The tooth with which this was connected was removed under as nearly aseptic conditions as possible. It was then dipped in iodin, cracked open, and a culture made in bouillon from the root canal. The organism proved to be *Streptococcus hemorrhagica* in an almost absolutely pure culture. Several white rabbits and some white mice were procured, and about 6 c.c. of the bouillon was injected into the ears of the rabbits and the abdomen of the mice. Twenty-four hours later, a second injection of the bouillon was injected into the abdomen of the rabbits. Forty-eight hours after the first injection, the eyes of the rabbits were found to be highly injected; the iris was inflamed, and the pupil contracted. It was a definite case of iritis. The eyes of the mice also reddened, but the involvement of the iris was not so readily determined. After the second injection, the rabbits died. The eyes were immediately removed under aseptic precautions, and a bit of the iris dropped into sterile bouillon. The next morning, the bouillon was found alive with an almost absolutely pure culture of the same organism. This was, I think, the first instance in which a definite demonstration was made of the selective affinity of an organism for an intra-ocular structure. I think that sometimes in the study of pathology we arrive at a more exact estimate of the actual conditions that obtain by an observation of the disease when it appears in a minor rather than in a maximum degree. We do not know quite what changes occur in the venous structures within the eye as the result of focal infections, but I have seen, as their result, moderate obstructions in the retinal veins with edema around the macular and lowered vision. Such a case came recently under my observation in consequence of an apical abscess, the congestion disappearing and the vision being restored on the removal of the infected tooth. The probabilities are that either as a result of bacterial infection or from the toxins given off by bacteria and taken into the venous circulation, a small embolus was formed which obstructed the circulation, but which was absorbed or passed into the general circulation when the source of the infection was taken away. I suggest this as a possible explanation of the somewhat obscure conditions that occur in advanced stages when we have complete obstruction of the veins and absolute blindness as a result.

DR. JOHN A. DONOVAN, Butte, Mont.: Drs. Brown and Irons discuss the etiology in different localities. I find that, in many cases of iritis, treatment of the nose brings marked improvement. My experience has been that many cases of iritis are due to inflammation of the nose. My experience in tuberculosis has been much like theirs.

DR. W. H. DUDLEY, Los Angeles: In a case of acute iritis beginning with violent symptoms and progressing rapidly, I investigated the cause. The patient had had a Wassermann test made recently. The teeth and tonsils were negative; the intestinal tract proved the same, and the urine was negative except for large quantities of diacetic acid and acetone. This being an unusual finding in a case of this sort, I gave the patient sodium bicarbonate. Within forty-eight hours, the eye became practically white, the pain was gone, the synechiae were disappearing, and the pupil was wide. In one case in which I had a great deal of trouble in getting response to remedies for two or three months, reexamination of the urine showed the same condition with reference to the acetone and diacetic acid. In this case, also, the response to alkali was prompt. The vision began to improve and the condition was relieved. Up to the present there has been no return of the trouble. Two cases do not prove much, but I do feel that, in some cases that do not clear up promptly under the measures used, if no other cause can be found, it is worth while to look for these acetone bodies.

DR. ALLEN GREENWOOD, Boston: "Elimination of diseases causing iritis" is a broad term. How can we always eliminate a cause? We make a roentgenogram of the teeth, but we have not absolutely eliminated the teeth. We examine the tonsils, but we have not absolutely eliminated the tonsils unless we remove them. The same is true of other conditions. It is a difficult matter to eliminate the hidden causes of this disease. Another thing, very few of the cases recorded as tuberculous are, I think, diagnosed correctly. Some of the members might confuse acute iritis with uveitis, which is often tuberculous in origin. In cases of acute iritis, it seems

to me that tuberculosis is rarely the causative agent. I think most of us will agree that in private practice the question of focal infection in the teeth is of more importance than in the tonsils, for there are more cases which can be demonstrated to be due to focal infection from the teeth. I am accustomed to take cultures of dental focal infections, and in most cases find the streptococcus that Dr. Rosenow has proved to be one that has a particular affinity for the iris.

DR. ANDREW TIMBERMAN, Columbus, Ohio: I believed in a causal relationship between teeth, tonsils and iritis for many years. In the last few years, however, I have changed my ideas. I heard this first report on 100 cases in Washington six or seven years ago. I was very much impressed and have been watching my cases with more interest since that time. Many of my cases of iritis have passed through the hands of other physicians, many of them oculists, and particularly the class of oculists who do no nose and throat work. I found, on observation, that many of these men made a very careless examination of the throat. Then I began a rather systematic examination of the throats of my patients, and in many instances when I first looked at them, I was sure that there was nothing wrong. But I have gone past that. A casual examination never will do. I never make an examination of the throat without pulling forward and to one side the anterior pillar, thus thoroughly exposing the fossa. I think that many times we overlook focal infection in that region. Only recently I saw a woman who had been told that she had no tonsils. When I first looked at her throat my impression was that her tonsils had been removed, but on more careful examination I found that she had tonsil abscesses hidden in the superior part of the fossa. I have come to look on tonsils a good deal as Schwartz did on temporosphenoidal abscess. I heard him say that there might be every symptom of temporosphenoidal abscess and the abscess not be present; and that one might have no symptoms of temporosphenoidal abscess and the abscess still be there. So it is with infected tonsils. I read an article by a New York man some time ago on "The Crucifixion of the Tonsil," and I rather agreed with him; but more mature observation and experience lead me to believe that if every child had his tonsils removed at 6 years, future generations would be happier and more healthy. These charts would suggest that sans teeth and sans tonsils, and desexed, we may be able largely to curb iritis.

DR. M. H. LEBENSOHN, Chicago: A negative Wassermann reaction does not always mean no syphilis. In pre-Wassermann days, we used to depend on therapeutic tests. A patient who gave no evidence or history of syphilis was treated with a good deal of mercury and iodids. If he recovered, we said it was syphilis, and if he did not recover, we did not know exactly what it was. The therapeutic test is still good. I have had a number of cases in which the spinal fluid and blood Wassermann reactions were negative, and if I could not find any cause at all, I put the patient on mercury and iodids, with a great deal of benefit. Now, if I get a positive blood or spinal fluid Wassermann reaction, I treat the patient with arsphenamin; if I get a negative Wassermann reaction, I treat him with mercury and iodids, and with great benefit in the treatment. I would like to ask Dr. Irons whether any cases that were clinically negative and gave a negative Wassermann reaction were given the therapeutic test?

DR. W. H. ROBERTS, Pasadena, Calif.: Dr. Lebensohn has not proved that those cases that do not show syphilis and that do not react to the therapeutic test are, nevertheless, due to syphilis. I think that a large majority of cases of iritis will improve under antisyphilitic treatment no matter whether they are syphilitic in origin or not. Before the days of serology, there is no doubt that we had the same troubles; i. e., toxins causing iritis, and yet we were told that 75 per cent. of our cases of iritis were syphilitic, and why? Because they improved under antisyphilitic treatment. If they improved in the old days under antisyphilitic treatment, they will still continue to improve under this treatment. Therefore, I wish to make a plea for the use of antisyphilitic treatment in all cases.

DR. ERNEST E. IRONS, Chicago: With regard to the effect of removal of tonsils on an iritis, it is, of course, recognized that in cases in which the iritis is due to tonsillar infection, the removal of tonsils is desirable and hastens recovery; but the argument as to etiology should not be based entirely on the effects of tonsillectomy. In cases in which subsequent events indicate that the iritis was due to other causes, sudden but temporary improvement may follow tonsillectomy. This effect seems to be analogous to the sudden effect following the intravenous injection of foreign protein, and like this, is probably nonspecific. We have, of course, used antisyphilitic treatment in cases in which it seemed indicated. In dealing with all forms of infection, it is necessary to bear in mind not only the sources of infection, but also the important factor of resistance of the patient. I agree with Dr. Holloway that the source of material is bound to modify the results obtained in respect to relative frequency of occurrence of the several causes of iritis. This is illustrated in the comparison of results in our two series. We have attempted to present merely a simple statement of what we found in these 200 cases which we studied as carefully as we could.

STUDIES ON ISO-AGGLUTININS IN THE BLOOD OF THE NEW-BORN *

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Transfusion of blood has become such a specific curative measure in hemorrhagic disease of the newborn and in traumatic or accidental hemorrhages in the new-born occurring during delivery that the practical application of this work will become evident at once.

Some observers have stated that iso-agglutinins and isohemolysins are not present in the blood of the newborn and, hence it is unnecessary to test for compatibility of the bloods when the mother acts as donor for her offspring. On the other hand, others assert that both iso-agglutinins and isohemolysins are present in the blood of the new-born, even in that of premature infants, before birth, and that transfusion without compatibility tests may prove disastrous. The latter opinion is the one prevailing. It is on account of this variation in opinions that the present study attempts to verify either contention.

One hundred mothers and their respective new-born babies were grouped (Moss' classification) and subsequently crossagglutinated. In every case the blood of the new-born baby was collected from the umbilical cord and the blood of the mother from the median basilic vein. All tests were performed within seventy-two hours after delivery. To prevent imperfect results, all bloods were previously tested for autoagglutination, a rare phenomenon occurring when the temperature of the blood is below that of the body. The grouping of the blood of both the mother and the new-born baby was done in the usual manner with known citrated serum 2 and 3. The technic for the cross-agglutination tests was as follows:

Five drops of a 1.5 per cent. sodium citrate solution was placed in each of two small test tubes. Nine drops of the baby's blood was collected in one tube, and one drop of the mother's blood added. In the other tube was collected nine drops of the mother's blood and one of the baby's. Both tubes were thoroughly shaken and allowed to stand for one-half hour. One-half drop of blood from the first tube was placed on the left extremity of a glass slide, and one-half drop of blood from the second tube was placed on the right extremity

* From the obstetric service of Dr. George L. Brodhead, Harlem Hospital.

of the same slide. A drop of physiologic sodium chlorid solution was added to each half drop of blood in order to dilute them, so as to render hemolysis and agglutination of the red blood cells much more easily visible. Cover glasses were used, and the bloods were examined microscopically. In fact, all bloods were examined microscopically, both when tested with the known serums and when crossed. Before each agglutination test was read positive, at least one-half hour elapsed, and the results were determined only after repeated thorough mixing and agitation of the bloods by rotating and lifting the cover glass from the slide. This was done to hasten, facilitate and make certain of the agglutination in case it occurred.

Table 1 shows the results obtained.

TABLE 1.—*Results of Cross Agglutination and Grouping*

Case	New-Born	Mother	New-Born	Mother	Case	New-Born	Mother	New-Born	Mother
1....	0	0	4	4	51...	0	0	4	4
2....	0	0	4	4	52...	0	0	2	2
3....	0	0	4	4	53...	0	0	4	4
4....	0	0	2	2	54...	0	0	1	3
5....	0	0	4	4	55...	0	0	2	4
6....	0	0	4	4	56...	0	0	2	4
7....	0	0	4	4	57...	0	0	4	4
8....	0	0	2	2	58...	0	0	1	4
9....	0	0	4	4	59...	0	0	2	3
10....	+	0	2	4	60...	0	0	1	4
11....	0	0	3	3	61...	0	0	4	4
12....	0	0	4	4	62...	0	0	4	1
13....	0	0	2	2	63...	0	0	3	1
14....	0	0	1	2	64...	0	0	2	4
15....	+	0	4	4	65...	0	0	3	2
16....	0	0	4	4	66...	0	0	4	1
17....	0	0	4	4	67...	0	0	4	3
18....	0	0	4	4	68...	0	0	4	4
19....	0	0	4	4	69...	0	0	2	1
20....	0	0	4	4	70...	0	0	2	4
21....	0	0	4	4	71...	0	0	3	3
22....	0	0	4	2	72...	0	0	4	1
23....	0	0	1	4	73...	0	0	4	2
24....	0	0	2	1	74...	0	0	4	3
25....	0	0	2	1	75...	0	0	2	2
26....	0	0	4	2	76...	0	0	2	2
27....	0	0	4	4	77...	0	0	3	2
28....	0	0	4	3	78...	0	0	4	4
29....	0	0	4	2	79...	0	0	4	1
30....	0	0	2	2	80...	0	0	4	1
31....	0	0	3	1	81...	0	0	3	3
32....	0	0	1	1	82...	0	0	3	1
33....	0	0	4	1	83...	0	0	3	3
34....	0	0	4	4	84...	0	0	2	1
35....	0	0	4	4	85...	0	0	2	2
36....	0	0	2	2	86...	+	0	4	4
37....	0	0	2	4	87...	0	0	4	4
38....	0	0	3	1	88...	0	0	2	2
39....	0	0	1	1	89...	0	0	4	4
40....	0	0	4	2	90...	0	0	4	4
41....	0	0	3	3	91...	0	0	2	3
42....	0	0	4	4	92...	0	0	1	2
43....	0	0	4	4	93...	+	0	1	4
44....	0	0	3	4	94...	0	0	2	2
45....	0	0	1	2	95...	0	0	3	2
46....	0	0	1	4	96...	0	0	4	4
47....	0	0	3	3	97...	0	0	3	2
48....	0	0	2	2	98...	0	0	4	4
49....	0	0	2	3	99...	0	0	3	1
50....	0	0	4	4	100...	0	0	4	2

In 54 per cent. of the cases, both the mother and her baby belonged to the same group, and therefore transfusion would have been perfectly safe.

In the remaining 46 per cent. of the cases, mother and infant belonged to different groups. In thirty of the latter forty-six cases, or in 65 per cent., the bloods when grouped were found to be absolutely incompatible, if we accept the grouping method as criterion for compatibility. By absolutely incompatible, I mean that either the mother belonged to Group 1 and her offspring to Groups, 4, 3 or 2; to Group 2 and her infant to Group 3 or 4, or to Group 3 and her infant to Groups 2 or 4.

In this incompatible group I do not include cases in which the mothers belonged to Group 4, and the new-born infants to either Group 1, 2 or 3, because Group 4 donors are supposedly universal donors, although this statement is somewhat incorrect.

When all the 100 cases were crossagglutinated, no clumping occurred, whether the bloods belonged to compatible or to incompatible groups. In only four cases (Cases 10, 15, 86 and 93) the red blood cells of the new-born were clumped by the mother's serum. This may be disregarded, as the important object in transfusion is to determine that the introduced red blood cells be not clumped. In no case were the corpuscles of the mother agglutinated by the serum of the infant.

From the results obtained, it is evident that no agglutinins or hemolysins are present in the blood of the infant capable of acting on the erythrocytes of the mother. If there are any, not only the agglutinins and hemolysins cannot be demonstrated by any known means, but also their agglutinating and hemolyzing powers must be so feeble that the mother's corpuscles are able to withstand their action, and remain intact and unaltered, so that transfusion is absolutely safe and devoid of danger even when compatibility tests are disregarded. Transfusions on infants at Harlem Hospital have demonstrated these facts repeatedly. Mothers belonging to a group incompatible with the group of their respective infants have been used without any ill effect, and in some cases without even a rise of temperature and chill so common after any transfusion. Furthermore, this study shows that the different groups to which the mothers belong occur with approximately the same frequency as those of the new-born, as evidenced by Tables 2 and 3.

TABLE 2.—*Classification of Mother's Blood*

	Number
Group 4	44
Group 2	26
Group 3	13
Group 1	17

TABLE 3.—*Classication of Blood of the New-Born*

	Number
Group 4	47
Group 2	24
Group 3	17
Group 1	12

Another very important piece of evidence has been brought out by this study. Up to now, it has been said that the corpuscles of the new-born do not have their full quota of receptors. My results demonstrate that this is a misconception, because every new-born infant has been grouped with the known serums 2 and 3 according to the Moss classification. If the red cells of the new-born infants did not possess receptors susceptible of being acted on by agglutinins present in other serums, how could we explain the fact that all of the 100 cases have been grouped successfully, as Table 1 shows?

Finally, if the skeptic contemplates compatibility tests, the cross-agglutination should be the one of choice, as Table 1 clearly shows that even though the donor and the recipient belong to incompatible groups, the cross-agglutination test will determine absolute compatibility. This would prevent rejection of the mother as the probable donor, eliminate the search for a compatible one and save time, all of which may be of vital importance in emergencies.

CONCLUSIONS

1. Mothers may act as donors for their new-born infants without compatibility tests for agglutination and hemolysis.

2. If tests are contemplated, the cross-agglutination test should be the one of choice so as to prevent the rejection of the mother donor in case she is found to belong to an incompatible group.

3. Proof is given that the corpuscles of the newborn infants have their quota of receptors. This is shown by the fact that in all of the 100 cases, the newborn babies have been grouped successfully according to the Moss classification.

4. Successful transfusions done at Harlem Hospital, using mothers who, when grouped, were found to belong to groups incompatible with those of their respective new-born infants, demonstrated practically that mothers may be used with impunity without any danger whatsoever.

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CONTROL OF PAIN IN FUNCTIONAL HYPERESTHESIA OF THE CILIARY MUSCLE (PAINFUL ACCOMMODATION)

THROUGH THE NASAL (SPHENOPALATINE, MECKEL'S) GANGLION *

JOHN GREEN, JR., M.D.
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In this and other countries where the most prevalent refractive defects are hyperopia or hyperopic astigmatism, the services of the ophthalmologist are most frequently sought for the relief of discomfort or pain in or in the vicinity of the eyes or in some part of the head, this symptom usually being associated with smarting, blurring of print, and a whole galaxy of minor complaints which are grouped under the term "asthenopia." Since myopia and myopic astigmatism are relatively infrequent, as compared with refractive states in which axial shortening is the fundamental defect, it follows that the complaint is much more frequently "inability to use the eyes" than it is "inability to see."

It is not our purpose to catalog or describe the great number of symptoms of asthenopia; they are legion. They vary greatly in different patients and, indeed, may vary greatly in the same patient at different times. To the patient who is not in the habit of analyzing his sensations, an accurate description may be impossible. On one point, however, he is very clear; namely, that his discomfort is aggravated by the use of the eyes.

In the vast majority of such patients an accurate correction of the refraction (and by this is meant the determination of the refractive error to the eighth of a diopter for the axial ametropia and the astigmatism, and the precise placing of the axis of the cylinder), associated with the correction of any vertical muscular error and appropriate management of lateral imbalance by means of prisms, exercises or operation, as may be indicated, will abolish all symptoms and permit the eyes to respond painlessly to all the demands of modern life.

It is a very common experience to find a patient suffering from a variety of asthenopic symptoms, including pain, whose distant vision is defective. The assumption that the refractive condition is one of myopia is strengthened by the improvement in vision, often to normal, by the placing of minus spheres (or minus spherocylinders) before the eyes. It is in cases of this type that the refracting optician frequently prescribes minus lenses, and is chagrined to find that his glasses, far from relieving his client, lead only to an aggravation of symptoms.

To the ophthalmologist, the true refractive condition is instantly revealed when the patient's eyes are put under the influence of atropin or some other reliable cycloplegic—a hyperopia, hyperopic astigmatism or rarely mixed astigmatism—which has been concealed by increased convexity of the lens dependent on exalted tone or "contracture" of the ciliary muscle. In many cases the prescription of proper lenses, but little weaker than the static measurement, leads to the happiest results. The "contracture" promptly yields to the combined effect of plus lenses and the complete physiologic rest of the ciliary muscle afforded by the cycloplegic.

Such a fortunate result, however, is not invariably attained. As soon as the ciliary muscle regains its activity after the effect of the "drops" has worn off, the contracture recurs, the eyes again become pseudomyopic, and the patient, while admitting that the glasses help for near work, bitterly complains that they make his distant vision very much worse. It requires great tact on the part of the examiner to gain the confidence and cooperation of the patient during the uncomfortable and trying period of adjustment to the new conditions imposed by the glasses. Before the spasm finally yields, it may be necessary to resort to several periods of atropin cycloplegia.

The relation between the physiologic tone and the pathologic exalted tone or "contracture" of the ciliary muscle has been discussed by Lancaster and Williams.[1] They define contracture as "a state of maintained contraction, or, looked at from the other and, as it seems to us, better point of view, a state of retarded relaxation. . . . Contracture is an excessive activity and should be stopped—tonus is normal and physiologic, and does not need to be stopped." The task of the examiner is, therefore, to determine how much of latent hyperopia is due to tonus and how much to contracture, and to prescribe a glass which shall do no more than "relieve the excessive action."

Accommodation associated with pain due to contracture of the ciliary muscle is characteristic of the extremely common types of cases just referred to. But there is another important, though not very large, group of cases in which accommodation provokes pain, often excruciating and utterly incapacitating, and in which there is no accommodative cramp. This condition was recognized and carefully differentiated by Donders [2] from cases of pain due to contracture, and was called by him "painful accommodation." Since the time of Donders, a number of writers have recognized the existence of painful visual sensations during accommodation and without accommodative cramp. For instance, Forster described this condition as hysterical kopiopia, Nagel as hyperesthesia of the ciliary muscle, Schenkel as hysterical ocular pain, and de Schweinitz as painful visual sensation, or hysterical asthenopia. All appear to be in agreement that underlying this

* Read before the Section on Ophthalmology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

1. Lancaster and Williams: Tr. Am. Acad. Ophth. & Oto-Laryngol., 1914, p. 170.
2. Donders: Accommodation and Refraction of the Eye, London, New Sydenham Society, 1864, p. 626.

accommodative anomaly there is invariably nervous instability.

In describing painful accommodation, Donders relates the following case history, which will help to make the clinical picture clear:

A patient residing in the East Indies experienced pain on making observations with optical instruments. His state was considered to be hyperemia of the retina. On reading and in calculating his observations, he had increased pain. Under atropin, hypermetropia of 1.5 was disclosed. Convex glasses, both weak and strong, failed to relieve. Derivants and leeches were tried, with equal want of success. Reading for a few minutes produced pain which compelled him to desist. After suffering eighteen months, he wrote to Donders, who ordered atropin twice a week and convex glasses of different strengths for work at different distances. Almost at once the pain ceased. We give the rest of the history in Donder's own words:

"When, after a first disappointment, the use of atropin was, a few months later, for the second time suspended, the pain on tension of accommodation did not return, and so far as I am aware no disturbance whatever has since recurred in making observations, reading, writing or calculating. This case scarcely needs any comment. It shows that in slight degrees of H. a condition may be developed by continued tension in which the least accommodation for near objects becomes very painful. Spectacles are then of no use, because with convergence involuntary accommodation is combined, and this again excites the pain."

This and similar cases related by Donders were all in patients under the presbyopic age. In 1917, one of us [3] presented a study of three examples of painful accommodation in persons with presbyopia. The impression gained from this study was that the condition was by no means so rare as the paucity of published cases would seem to indicate, and that probably many cases escaped us through failure to put ourselves *en rapport* with the whole physical and psychic history of our patients.

The diagnosis of painful accommodation should not be made unless these conditions coexist:

1. The presence of hyperopia, hyperopic astigmatism or mixed astigmatism.
2. The absence of any muscular anomaly which might conceivably give rise to symptoms of muscular asthenopia, including pain.
3. The absence of "contracture" or "spasm" of the ciliary muscle.
4. Complete control of pain during efficient atropinization.
5. The return of pain on use of the eyes as soon as the effect of atropin has passed away (the patient wearing his full correction).
6. The persistence for weeks and months of unabated pain in near work, despite the constant wearing of the full correction.

The inadequacy of routine measures in the management of these cases is well recognized by those who have given the subject much thought. The possibility that a patient who complains of pain in using the eyes may be suffering from "painful accommodation" should always be borne in mind. Several follow-up visits after glasses have been prescribed may be needed to establish the diagnosis. Too frequently, we suspect, the diagnosis is missed altogether, and the patient, unrelieved, drifts from one adviser to another. Sooner or later he is labeled "neurotic" and is shunted off to a psychiatrist, whose failure to help results in the patient consulting a representative of one of the cults. (Let us add, parenthetically, that we do not mean to disparage the value of mental suggestion in certain forms of asthenopia. We are entirely in accord with Lancaster's [4] recent observation that a careful analysis of the mental state of some of these sufferers will reveal "anxiety neuroses" which may be dissipated by psychotherapy.)

The fact that the pain can be completely abolished by thorough atropinization, that it does not return during the period of atropinization, and that it does return with the resumption of the function of the ciliary muscle, proves that the source of the pain lies in the ciliary muscle. We feel, therefore, that Nagel's designation—hyperesthesia of the ciliary muscle—most accurately describes the condition.

Not all cases are of the relatively mild type of the one related by Donders, and yet even in his case the first atropin period was followed by recurrence of symptoms. Typical of the severe type is a case reported by one of us [3] in 1917, a brief synopsis of which is given:

Dr. X., a man of excellent physique, after graduating in medicine, set out to achieve a large measure of success as a practitioner. He was successful from the start. He entered actively into the work of various medical societies, held various teaching positions in his medical school, and ultimately occupied the chair of surgery. For twenty years it was one continual grind from morning to night. Often he would return home at midnight, tired out after a round of visits, and spend the next two or three hours preparing himself for the next day's lecture or demonstration. In spite of his strenuous life he supported, with equanimity, a moderate hyperopia, with a low inverse astigmatism. Without experiencing any of the signs of early presbyopia, he reached the age of 47, when, rather suddenly, the accommodative strain became too great. After a morning's operating, he would pass a wretched afternoon, with bloodshot, aching eyes. The oculist consulted prescribed reading and operating glasses, with bromids internally. There was no relief. Finally a sea trip was planned and undertaken, during which he abstained from reading. He returned convinced that his eye troubles were at an end. But his hopes were dashed the first morning he attempted to operate—the eyes burned and ached. That afternoon was spent on a couch in a dark room, with cool cloths applied to the closed lids. For two months he led a miserable existence, endeavoring to get through with the accumulated operative work of the summer, and spending his afternoons and evenings in ocular misery. He was fond of social life, but found the bright lights of the drawing room intolerable. "On several occasions," he said, "it has required all my will power to remain in a friend's house the time demanded by the rules of courtesy." Such an experience would be followed by a sleepless night.

A group examination proved that, apart from his eyes, he was a thoroughly sound man. The measures adopted in this case were (1) prolonged atropinization (one month); (2) full correction of a hyperopic astigmatism and presbyopia (bifocals); and (3) systematic reeducation of his irritable ciliary muscles by carefully regulated reading exercises. He abandoned his practice, and went to live on his farm in a distant state. He has made a partial recovery (ability to read upward of an hour at a time), but has never ventured to resume his practice.

As has been stated, it is always possible to abolish the pain in this condition by rendering the accommodative apparatus functionless by means of atropin, but it is obviously impossible to keep a patient permanently under the influence of atropin; and, moreover, in persons with presbyopia, such a procedure is not without danger of inducing a rise of tension in preglaucomatous eyes.

3. Green: Tr. Am. Acad. Ophth. & Oto-Laryngol., 1917, p. 178.

4. Lancaster: Tr. Am. Acad. Ophth. & Oto-Laryngol., 1922.

The question then arose, Might it be possible to control the ciliary pain by indirect measures? As pain is the sole disabling factor, if some means other than atropinization could be found of controlling this factor, there would be far less difficulty in reestablishing the normal function of the ciliary muscle. It was recalled that, in 1908, Ewing [5] reported the complete relief of the pain of an acute glaucoma within a few minutes after the application of a 50 per cent. solution of cocain to the mucous membrane over the site of the nasal ganglion. One of us [6] has frequently observed the complete control of the pain of an acute iritis by the full cocainization of the nasal ganglion on the corresponding side. If the pain of glaucoma and the pain incident to a congested or inflamed ciliary muscle (iritis) can be controlled by this measure, it seemed likely that it would be equally efficacious in functional hyperaesthesia of the ciliary muscle. About eighteen months ago an opportunity was given to test this theory.

REPORT OF CASES

CASE 1.—*History.*—Rev. J. W. H., aged 34, a Canadian clergyman, consulted one of us (J. G.), Oct. 13, 1921. We give his ocular history in his own words:

"From the age of 16 to 22, I worked in an engineering factory. I worked from 6 a. m. until 5 p. m. in the usual trying conditions peculiar to most factories in those days. Being ambitious, I took up a college course. The lectures were at night and several miles from my home, so that for five years I led a very strenuous physical and intellectual existence. I was very strong, however, and all during that period had no eye trouble of any description. After completing my course at the end of six years, I was a fully indentured engineer. I then decided that I would enter the ministry. Having very little means, I was compelled to take a somewhat difficult course to achieve this. But this is aside of our present object. It was, however, during my first year at the theological college that it became necessary to consult an eye specialist. He ordered spectacles, and I have worn them ever since. After I finished my theological course, I left England and came out to Canada. For six years I did missionary work. During that time I had little or no trouble. After this I came to the city and there was connected with a large city church. I then began to have difficulty in focusing, and during my year there I was compelled to consult a specialist several times. With each consultation there was a change of lenses made.

"I then volunteered for overseas service in Mesopotamia; but owing to very important work that I was given in India, I was not allowed to reach Mesopotamia. Gradually the eye strain increased. So bad did it become that at the end of a year I was rarely without acute pain. This brought on (together with tremendous responsibilities) great mental irritation. During an interview with the general, I flared up and gave him a first-class exhibition of temper. This was so unusual that he put me down as a sick man. I confessed to the head and eye aches. That night he took me to Bombay with him to consult some of the army specialists. They gave further changes of refraction, and ordered me to the hills for a six weeks' rest. At the end of that time I was a little better; but as soon as I took up the work again the old trouble returned. The upshot was that the doctors ordered me home to Canada.

"On my return I consulted an oculist. He said that it seemed to him that the trouble might be some organic nervous trouble and turned me over to a nerve specialist (a psychanalyst). After several months of digging into my complexes, I apparently refused to be harmonized, as I was as bad as ever. Then followed a course of chiropractic. But the spine juggling brought only increased irritation. It was after this series of séances that I went to Beaumaris to recover from the manhandling, when I met you. The rest you know. This, briefly, is the history of my life as far as the eye trouble is concerned. As I look back I believe I have suffered from painful accommodation for about eight or ten years."

Symptoms.—Ocular pain and retro-ocular headache developed almost immediately after the patient began to read: "Both eyes got red-hot. . . . They seemed to swell and protrude." The patient was well set up and muscular, and looked the picture of health. He had had no severe illness. Apart from a slight drooping of the lids, which gave to the face a sleepy expression, and moderate conjunctival hyperemia, there was nothing noteworthy. The pupils were equal and reacted normally. Right vision was 6/22; left vision, 6/22.

Right — .12 — 1.75 CX 10° V 6/6
Left — 1.50 CX 150° V 6/6+

Muscles: Distance, orthophoria; near, exophoria 6°; no hyperphoria; no cyclophoria.

Form fields, full; there was some interlacing of the green and red fields. There was no central color defect. Physical examination was negative. Roentgen-ray examination of the teeth was negative. Under homatropin cycloplegia:

Right + .5 — 2.00 CX 5° V 6/5
Left + .75 — 2.25 CX 170° V 6/5

Treatment and Course.—Atropin, 1 per cent., was then ordered (three times a day for one week). After the first day the eyes became entirely comfortable and remained so throughout the period of atropinization. The test (atropin) gave:

Right + .75 — 2.50 CX 10° V 6/5
Left + 1.25 — 2.25 CX 170° V 6/5

Glasses were prescribed as follows:

Right + .5 — 2.50 CX 10°
Left + 1.00 — 2.25 CX 170°

Accommodation was: Right, 6.00 D; left, 6.00 D. Ophthalmoscopically, the eyegrounds were normal.

One of us (G. S.) reported, Oct. 13, 1921. "Mr. H. has a well marked hyperplastic postethmoid-sphenoiditis."

During the period from October 13 to 25, routine nasal treatment was directed against this condition. October 26, the right nasal ganglion was injected (.5 c.c. of 5 per cent. phenol, 95 per cent. alcohol). November 1, the left nasal ganglion was injected.

The patient returned to his home in Canada, Nov. 11, 1921. He was forbidden to use his eyes for more than five minutes at a time at first, but was instructed to increase the reading periods very gradually, provided pain did not recur. He was given a 3 per cent. homatropin solution to use at night in case the symptoms should reassert themselves. He was also provided with a 1 per cent. atropin solution for another "rest cure," should the pain recur in its former severity. As it was possible for him to relinquish his pastoral duties for six months, he was advised to do so.

He wrote under date of Nov. 27, 1921, "I have not written to you earlier as I thought it would be better to take a couple of weeks and then report on the condition of my eyes. I find the last few days that there has been a recurrence of the pain and sense of strain in the eyes. I resorted to the drops, as ordered, and I am afraid it will be necessary to place the eyes again at rest by a two weeks' application of atropin. The severe headaches from which I suffered have so far not returned, which, as you can imagine, is a great source of relief and gives me every encouragement to hope that the source of the trouble has at last been located. I have given up the parish for six months, as you suggested, and so will give the eyes all the chance that I can to obtain a complete rest."

Feb. 23, 1922, he wrote: "I have had none of the extreme pains at the back of my head since the operation, but the eyes still are troublesome, although there is marked progress. I do not have pain as frequently as I did, and the pain is confined almost entirely to the balls of the eyes; but as to reading, it is next to impossible to read for ten minutes at a time without the pain recurring."

The patient returned to St. Louis, April 8, 1922, complaining of aching through the temples and eyes. Cocainization of the nasal ganglion on either side produced almost immediate and complete relief.

5. Ewing: Am. J. Ophth. **25**: 354-355, 1908.
6. Sluder, Greenfield: Headaches and Eye Disorders of Nasal Origin 1918, p. 230.

April 10, the patient reported that he had been free from pain up to 6 p. m. of the 8th, when it recurred slightly. On the evening of the 9th, pain recurred in the occipital region. April 17, the right nasal ganglion was injected. Three days later the left was injected. Repeated tests yielded identical results, as follows:

Right + .50 — 2.00 CX 5°
Left + .87 — 2.00 CX 165°

which were prescribed.

Nothing more was heard of the patient until Dec. 22, 1922, when, in response to a letter of inquiry, he wrote: "I am sure that both you and Dr. Sluder will be as delighted as I am to know that I am in better health now than I have been for five years or more. On my return from St. Louis in the spring, for a time I was a little shaky. Nothing very acute but a certain discomfort. . . . About the end of July I had a very bad attack, which lasted three days. The pain was acute, both in the eyes and the back of the head. Since that time I have gotten gradually better. I have never now a suggestion of pain in the head, and my eyes are splendid. I gradually took up reading toward the end of September, and now use my eyes as much as I ever did."

On the return of the patient to St. Louis, Jan. 23, 1923, it was possible to verify all the foregoing statements. A final adjustment was made, as follows:

Right + .37 — 1.87 CX 5°
Left + .75 — 1.87 CX 165°

March 17, he wrote: "My eyes still continue in splendid condition. There has been no suggestion of a return of the old trouble, although I use my eyes for reading and writing several hours each day."

CASE 2.—Mrs. L. D., aged 61, gave a typical history of painful accommodation of several years' duration. After estimation of her refraction (under homatropin), glasses were prescribed as follows:

Right + 2.75 + .25 CX 120°
Left + 2.37 + .62 CX 60°

Muscles: Distance, esophoria 1°, no hyperphoria; Near, exophoria, 3°, no hyperphoria. Accommodation: right 1 D; left 1 D.

The patient had the benefit of a group examination, which disclosed nothing but some abscessed teeth, which were promptly extracted. She has been seen at intervals for several years. Systematic reading exercises of increasing duration have been tried on several occasions, but pain and "distress" invariably occur in from ten to twenty minutes. When seen, Nov. 1, 1922, she was very despondent because of severe pain in the eyes which came on a few minutes after beginning to read. November 4, both nasal ganglions were injected. She returned to St. Louis, Jan. 25, 1923. She stated that since the nasal operation "there is freedom from nerve strain around the eyes" and that her "head feels more comfortable." She can now read thirty minutes without discomfort. She was anxious to have the nasal operation repeated, which was done, January 26. At this writing (March 25, 1923) she is still in the stage of reaction following the second injection: hence final conclusions cannot be drawn. This case is admittedly incomplete. It is presented merely to show improvement following a single injection.

COMMENT

A frontal sinus abscess causes pain in the brow, which, almost uniformly, comes on after the patient arises, and stops sometime during the day, the night always being free of pain. Because of its "morning" appearance, in earlier time it bore the name of "sun pain"; because of its cyclic recurrence, it was supposed to be of malarial origin. Such a patient will show pathologic changes in the frontal sinus by roentgen ray, and will have pus in the middle meatus in the nose, unless the outlet is completely occluded; under this condition, there will be great pain, and rupture into the orbit will almost surely follow.

Vacuum frontal headache, not unlike the clinical picture of painful accommodation, uniformly gives a tender point at the upper inner angle of the orbit—"Ewing's sign"[7]—with greater or lesser discomfort on use of the eyes, particularly for near work.

Anterior ethmoiditis causes pain referred to the eyes or behind them; usually pus is found in the middle meatus. Vacuum anterior ethmoidal headache gives rise to similar sensations, and, in addition, there is a point of tenderness at the site of the lacrimal bone. Nasociliary neuralgia is described as tenderness of the nasal bone and discomfort from the pressure of the bridge of spectacles or the guards of eye glasses; Ewing's sign is absent. It is relieved by applications of cocain to the uppermost anterior limit of the nose, the point at which the nasociliary nerve enters. It is doubtful whether disease of the antrum of Highmore ever gives rise to sensations which might be regarded as of ocular origin. All of these disorders are unrelated to painful accommodation, which, it seems to us, is a separate and distinct clinical entity.

For some time it has been known to us that the pain of all eye disease could be stopped by a cocainization block of the nasal ganglion. One of us (G. S.) has observed a case of traumatic keratitis with great pain, which was stopped by cocainization of the nasal ganglion. The only sensation left in the eye was described as the same feeling as "when the cinder first struck the eye"; in other words, the ophthalmic division of the fifth nerve conveyed the sensation first made by the cinder, but the great deep pain of the infected cornea was controlled through the nasal ganglion. Bryan[8] has reported a herpes of the first and second division of the fifth nerve with great pain in the eye. He showed that cocainization of the ganglion stopped the pain in the eye, but did not influence the pain of the first division. He then did an intrasphenoidal cocainization of the upper lateral part of the sphenoidal cell along which the first division runs, with complete relief of the pain in the first division but without abatement of the ocular pain.

From these cases it seems reasonable to infer that the great pain of ocular disorders, iritis, keratitis, etc., is transferred by some path through the nasal ganglion, and it seems to us to follow logically that hyperesthesia of the ciliary muscle may be, in some instances, produced by lesions in that district. Such lesions should be susceptible of satisfactory surgical treatment, but great care should be taken in establishing a differential diagnosis. Let us recall, in this connection, that lower half headache may be of ganglion or sphenoidal origin. In the one case it is controllable through the nasal ganglion and in the other it is not, so that falure to control it through the nasal ganglion does not mean failure of all possible control. In addition to those cases which almost always show pathologic changes in the district, there are others which are controllable by cocainization of the nasal ganglion, but do not always give satisfactory results from injection of it. Of late, one of us (G. S.) has come to think that through the sympathetic there may be exercised an influence on disturbances in distant parts, which, at present, is not at all understood and cannot even be speculated on. Although these cases are relieved by cocainization of the nasal ganglion, injections of it are disappointing. In the case of the clergyman there was a definite postethmoidal inflammation without pus; it was an ideal case for injection. The first injection relieved the great pain from which he suffered, leaving only the painful accommodation; the second injection relieved the painful accommodation, which is quite in line with logical expectation.

7. Ewing: Tr. Am. Ophth. Soc. 9: 60, 1900.
8. Bryan, W. M. C.: Personal communication to the authors.

If, as we believe, the effect of the injection is to bring about an involution of the hyperplastic process surrounding the ganglion, it is not surprising that there may be an interval of several weeks before the patient is conscious of improvement. It is possible, too, that as the number of cases increases, we may meet with disappointments, as some of them may be of sphenoidal origin, or the point of control may be within the sphenoid.

Was injection of the ganglion a positive factor in the improvement of these patients? Would they not have improved as rapidly and as well by accurate correction of the refraction, atropin rest periods and systematic ocular exercise (reeducation of the irritable ciliary muscle)? Our experience indicates that while these measures are necessary and essential in every case and may suffice in the milder examples of this trouble, they are likely to fall short of entire success: that while there is usually improvement there is only rarely a definite cure.

The one conspicuous feature—pain—occurs whenever the ciliary muscle is called into use by the act of accommodation.* Other symptoms of asthenopia, if present, are inconspicuous. The pain increases in intensity, the longer the patient uses his eyes, until at last it becomes unbearable and the patient has to desist. It does not terminate with the cessation of near work, but continues for many hours after the accommodation has been inactive.

It is our belief that injection of the nasal ganglion, by eliminating the disabling symptom—pain—is a very real factor in permitting the patient to resume the normal use of his eyes. It is a truism that one shrinks from exercising any bodily function that experience has shown will surely give rise to discomfort, and this disinclination is not solely confined to highly sensitized persons—the so-called neurotics. If, after repeated trials, a patient, equipped with the most exact refractive correction, experiences pain after a few minutes' use of the eyes and finds that his painless reading periods do not become longer, however assiduous his practice and however faithfully he may carry out his physician's orders, he will inevitably despair of ever fighting his way through.

On the other hand, if nasal ganglion injection, by abolishing his painful sensation, reveals to the patient a new power and a new endurance, the early reestablishment of the normal function of the ciliary muscle will not be difficult.

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ABSTRACT OF DISCUSSION

Dr. Lloyd Mills, Los Angeles: This novel application of Dr. Sluder's work is based on the following facts and statements: 1. The sphenopalatine ganglion and its branches become involved in the exceedingly common hyperplastic inflammations of the postethmoid sphenoidal district in the same way that the optic nerve may be affected in postethmoid sphenoiditis. 2. The intense pain of iritis, ocular herpes, glaucoma and keratitis has yielded to cocain anesthesia or to silver nitrate cauterization applied over the sphenopalatine foramen or to the injection of a phenol-alcohol mixture into the ganglion. 3. Injection of alcohol into the ganglion has been followed by sympathetic paralysis in the corresponding eye. Ocular pain or pupillary paralysis occurs but rarely, however, in frank ganglion involvement from adjacent nasal disease, the characteristic symptom of which is the "lower half headache" corresponding to the main nervous distribution. Ordinarily, no branches of the ganglion reach the globe; but this region is prone to anatomic vagaries, and branches to the sixth nerve; the ciliary ganglion and the optic nerve sheath have been noted. An active nervous relation between eye and ganglion functioning through the cervical sympathetic loop is too strained to be credible. A comparison, therefore, of the alleged constancy of sphenopalatine involvement, with the rarity of ocular association, forces the conclusion that these occasional cases represent the occasional anatomic variations already mentioned. The point is capable of proof, however, by the routine cocainization of the sphenopalatine ganglion in a consecutive series of patients with ocular pain, regardless of its cause. If all ocular pain can be relieved by this cocain block, then the constancy of an actively functioning relation between eye and ganglion is sufficiently and practically demonstrated. The difficulties that have hindered the acceptance of alcohol injection of the nasal ganglion have been those of accurately localizing the lesion in the sphenoid, ganglion or vidian nerve, inability to place the injection correctly, occasional severe pain and reaction, frequent necessity for repetitions of treatment, and the rare production of abducens paresis, ptosis and miosis. The possible great and more applicable benefits of the minor measures of cocain blocking and cauterization with silver nitrate have been lost sight of in the difficulties attendant on the severer procedure. The full value of these measures can and should be ascertained conclusively. Dr. Green is to be congratulated on the hopeful line of attack on the distressing condition of painful accommodation which is opened by his ingenious adaptation of Dr. Sluder's work.

Dr. Thomas E. Carmody, Denver: Of the pains in different parts of the fifth nerve, of course, we had knowledge for a long time, and we have paid particular attention to the pains associated with disease of the tonsils and of the teeth; but we had not considered the matter seriously until Sluder's work was made known. Of course, our attention has been called to Ewing's sign, but we do not know whether it involves the sympathetic, or how it is controlled. The pains Dr. Sluder described, which are sometimes referred to the throat from the sphenopalatine ganglion, and occur along the sphenopalatine margin, can be controlled. But those that are referred to the jaw and to the ears are not controlled by cocainizing the sphenopalatine ganglion. As to pain in the eye, I have had very little experience. The patients who complain of this symptom are referred to the oculist. If I do not find any signs of disease, I feel that the oculist should see them first to ascertain whether there is anything in the eye to account for the pain. The possibility of influencing pain in the eye through the sphenopalatine nerve appears to me to be due to the cocain being carried through to the lymphatic spaces. The ciliary branches have no relation, except through the sympathetic and back through the gasserian ganglion and the sphenopalatine ganglion. The point brought out by Dr. Green that many of these patients become neurotic and go from one physician to another, and then collapse, is important. The reason is that we do not go into the case thoroughly enough. The mental condition of the patient becomes such that he is likely to seek relief wherever he thinks it can be obtained.

Dr. George S. Derby, Boston: Although I do not wish to throw doubt on the diagnosis in the cases so well described by Drs. Green and Sluder, yet I think we should all bear in mind the great frequency of various types of neuroses among our patients. In my experience, painful accommodation most often manifests itself as a neurosis, and occurs in those who have been subjected to overwork and overstrain for a considerable period of time, as in the cases reported by Dr. Green, and also in others, especially women who are of unstable, nervous organization. We are beginning now to see in the literature more and more attention paid to this very important subject—witness a paper by Harford in the transactions of an international congress, and one by Lancaster at the last meeting of the academy. Some of these cases are most resistant to treatment, even in the hands of capable neurologists and psychiatrists. A good example of such a neurosis is the case of an ophthalmologist, aged 52, practicing in a New England city of moderate size, who consulted me last December, complaining that he could not use his eyes for close work for more than five minutes without pain. His refraction had been taken repeatedly without

result, and a thorough general overhauling had been negative. After a careful study of the case, I made up my mind it was a neurosis, and advised him to see Dr. Austin Riggs in Stockridge, Mass., one of our best neuropsychiatrists. The patient wrote to me later that he went to see Dr. Riggs. He found Dr. Lunt, an associate, writing a paper on the subject, so he collaborated with him from the standpoint of both victim and executioner, with quite successful results. His eyes have been well this winter and now do all the work he asks of them without much, if any, discomfort. I feel strongly that we should carefully consider this question of a neurosis in all these cases of so-called painful accommodation. It is hard to see how cocainization of the ganglion could have any permanent result.

DR. JOHN GREEN, JR., St. Louis: Any one who has observed the almost magical subsidence of pain in iritis after the application of 50 per cent. cocain to the nasal ganglion will no longer doubt that ciliary pain can be controlled temporarily by cocainizing this region. In regard to Dr. Derby's remarks, I am entirely convinced that these cases present a background of nervous instability. That was my conclusion in my first paper on this subject, presented in 1917. Of three cases reported, two were subjected to very careful neurologic and psychic examination, but in spite of every help from the neurologist and psychiatrist, these patients were not definitely cured. They were improved, but they did not reach the point of my clergyman, who has been able to use his eyes eight or ten hours without any discomfort whatever.

DR. GREENFIELD SLUDER, St. Louis: To what extent can the pain of inflammatory lesions in the eye be controlled through the nasal ganglion? It may be controlled by injection of the ganglion, but again injection may fail and subsequent cocainization may succeed. At present an explanation of these variations is unknown. Ocular pain without ocular lesions may depend on a lesion in the nasal ganglion, just as there may be a severe ganglion neuralgia, controllable from the ganglion, without evidence of a pathologic condition. It is understandable that functional eye pain, of whatever severity, from a lesion in the ganglion district should be controllable by injecting it. Patients with "lower half" headache, whose ganglion district appears normal, have had antecedent lesions there. Neurologic problems of the postnasal district are interesting and largely unsolved. It is possible that a "trophic" influence may be exerted over inflammatory eye lesions through the nasal ganglion. The adjective "trophic" may be inexact. Certain it is, however, that following control of pain through the nasal ganglion some intractable inflammatory eye lesions have suddenly begun to improve. Paralysis of the third and sixth nerves occurred once for each nerve. In these cases, the phenol-alcohol passed from the pterygomaxillary fossa upward and outward to the sphenoidal fissure (the tissues were unusually loose). Recovery was complete in three months. Sensory changes have been observed six times in the palate and once in the face. The question arises, Is it the general effect of cocain that controls the pain? Many times the experiment has been tried of heavily cocainizing some other part of the nose. It has always failed to relieve the ocular pain. The case referred to and reported by Dr. Bryan shows very clearly that the painful eye sensation is transmitted backward through the nasal ganglion and not through the ophthalmic division of the trigeminus. One is left with the feeling that it must be the sympathetic that conveys the sensation, which is difficult to understand, since the sympathetic reaches the eye by way of the ophthalmic ganglion of the first division of the fifth. It has been known for years that the sympathetic trunk carries sensory fibers, the cell bodies of which are in the posterior root ganglion. One is tempted to assume that these fibers may explain the phenomena. Ranson states that their threshold is high and that ordinarily they do not transmit painful sensations; but despite the sensory fibers in the sympathetic trunk, there is no anatomic explanation for the fact that eye pain can be controlled from the nasal ganglion, any more than there is explanation for the control of external cricodynia, or complex pharyngeal or esophageal spasm, by anesthetizing the nasal ganglion.

Clinical Notes, Suggestions, and New Instruments

ABSCESS OF FIBROID UTERUS PERFORATING INTO GENERAL PERITONEAL CAVITY

HERBERT E. STEIN, M.D., NEW YORK

The danger of fibroid tumors of the uterus lies not so much in their presence per se, as in the secondary changes that they may undergo, their remote effects on the cardiovascular system, and their pressure on neighboring organs and tissues.

Of 2,274 cases of uterine fibroids reported by Noble, these degenerative changes and complications were noted: necrosis of tumor; myxomatous degeneration; hyaline degeneration; cystic degeneration; fatty degeneration; calcareous infiltration; malignancy; edema; twisted pedicle; uncontrollable hemorrhage, and aberrant sites.

In this large series, suppuration was absent, although its presence has been noted by other authors. However, its infrequency is apparent. In a fairly extensive review of the literature, I have failed to come across the report of an abscess of a fibroid perforating into the general peritoneal cavity. A report of the case seems worth while.

REPORT OF CASE

Mrs. S., aged 44, admitted to the gynecologic service of Harlem Hospital, Aug. 14, 1922, whose family history was irrelevant, had pneumonia at the age of 19. Menstruation, which began at 14, was regular, of five days' duration, profuse in quantity, but not associated with any pain. She had been bleeding for the past five weeks by the vagina. She never had any miscarriages, and had had three normal confinements. During the last few years she had suffered with indefinite pains in the lower abdomen.

The day before admission to the hospital, the patient was seized with severe lancinating pain in the hypogastric region, more marked about the umbilicus. After that, she vomited several times, noticed abdominal distention, and was unable to empty the bowels or evacuate the bladder.

The patient was stout, dyspneic and apparently in pain. The mucous membranes were pale; the heart sounds were of poor quality, and there were asthmatic râles present throughout the chest. Blood pressure was 105 systolic, and 65 diastolic. There was moderate distention and tenderness of the lower abdomen. An indefinite, rather hard mass extended from 2 centimeters below the umbilicus to the symphysis.

Pelvic examination elicited a relaxed perineum, the cervix enlarged, of normal consistency, and at right angles to the axis of the vagina, the external os admitting the tip of the index finger. The fundus was converted into the mass mentioned above; it was fairly tender and about 12 cm. in diameter.

Urinary examination showed: specific gravity, 1.018; a trace of albumin, numerous hyaline and granular casts, and occasional pus cells.

Blood examination showed: red blood cells, 3,200,000; hemoglobin, 60 per cent.; leukocytes, 8,500, and polymorphonuclears, 87 per cent.

The temperature on admission was 100; pulse, 90, and respiration, 20.

On the third day, all the symptoms became aggravated, abdominal tenderness, rigidity and rebound were more general, and the temperature rose to 101.5, with the pulse to 120. A diagnosis was made of fibroid uterus undergoing some secondary changes and causing beginning general peritonitis.

Under gas-oxygen anesthesia, a left paramedian incision was made. The peritoneum was found thick and edematous, and free seropus was found in the peritoneal cavity. The omentum was bound down over the uterus and the tubes. When the adhesions were freed, foul-smelling pus escaped from an opening in the left cornu, which freely admitted a probe. The uterus was about 12 cm. in width, and of an irregular contour. The left tube was markedly thickened and almost black at its proximal half; the fimbria was open but

congested. The right tube was congested. Both ovaries contained small retention cysts. The appendix was markedly inflamed and covered by a fibrinous exudate. Supravaginal hysterectomy, double salpingo-oophorectomy and appendectomy were performed in the usual manner, and the abdomen was closed without drainage. The patient made an uneventful recovery.

A pathologic report by Dr. Gonzales stated: The uterus was 10 by 10 by 10 by 4 cm. in size, with an irregular surface and covered by a greenish exudate in the region of the left tube. The wall contained three fibroids. In the lumen there was a soft, pedunculated, greenish tumor 3 by 3.5 cm. in size, which on cross-section appeared soft and greenish gray. The rest of the endometrium appeared normal. Both tubes were swollen and congested, the left one being covered by the same greenish exudate, its interstitial portion being absolutely gangrenous. The lumen was completely obliterated. A section through the abscess cavity showed the site to be entirely uterine, no interstitial tubal tissue being present. The distal portions of the abscess cavity showed the presence of hyaline degenèration.

COMMENT

A most interesting phase of this case is the source of the infection. I was dealing originally with a fibroid uterus, one part of which was undergoing hyaline degeneration, and another section contained a sloughing submucous polyp. I believe that the active process was due to a thrombus infected from the sloughing polyp becoming lodged in one of the arteries at the bifurcation of the uterine and ovarian vessels on the left side. The condition of the tube did not appear as if it was the original source, particularly as the abscess cavity did not involve the interstitial portion of the tube.

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ACUTE APPENDICITIS IN A CASE OF STRANGULATED HERNIA

VINCENT ANTHONY LAPENTA, M.D., INDIANAPOLIS

Dr. A. W. Miller, Aug. 1, 1923, referred for examination to me a boy, aged 2 years, who had a large swelling in the scrotum and right inguinal region. The child appeared to be very sick and was vomiting frequently. The pulse was rapid and of good volume, the temperature was normal, and the abdomen was slightly distended. An attempt to reduce the hernia was unsuccessful. The mother reported that incarcerations had occurred at other times, which had been reduced by manipulation; this, however, was the first time that the child had shown such a sick appearance. On account of the irreducible strangulation, an immediate operation was advised.

The patient was admitted to St. Francis Hospital, and under ether anesthesia, a classical incision was made, exposing the constriction near the internal inguinal ring. The contents of the sac, however, could not be reduced. The sac was dissected free from the elements of the cord and opened. A small amount of serohematic fluid escaped. Some firm adhesions at the sac neck, preventing reduction, were separated. The contents of the sac proved to be a long cecum, with a large thickened appendix, showing signs of acute inflammation. The cecum, entirely free of the mesentery, measured fully 4 cm. to the iliocecal valve. The appendix was 8 cm. long and 1 cm. in diameter.

The point of interest in this case is undoubtedly the absence of fever, although there was sufficient inflammation to produce it. While the fever was absent, the toxic manifestations were very evident. The child presented the typical peritonitic face, with abdominal distention and active reverse peristalsis.

The acute inflammation of the appendix was, no doubt, superinduced by the trauma and vascular distention due to the incarceration, making possible the development of a true secondary inflammation. I have often observed that the thermic reaction, both in appendical inflammation and in strangulated hernia, with severe peritoneal reaction, in children below 5 or 6 years of age, is usually in reverse proportion to the intensity of the inflammation present. This seems to me to be a point well worth bearing in mind, since the absence of fever may lead one to temporize, and often with fatal results.

In adults, the temperature remains a trustworthy guide, not second even to the total leukocytic count. In my experience, this criterion has proved to be inapplicable to small children, in whom severe peritoneal inflammation can exist, with comparatively mild thermic elevation, while the leukocytosis is always present.

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TRAUMATIC RUPTURE OF THE PERICARDIUM WITH RESULTING DEXTROCARDIA COMPLICATED BY RUPTURE OF THE DIAPHRAGM AND LIVER *

J. F. DOUGHTY, M.D., CHICAGO

This type of injury to the pericardium is unusual; the resulting dextrocardia is particularly interesting. I was able to find in the literature only one case of rupture of the pericardium due to trauma,[1] but many due to gunshot wounds.

Miss M. H., aged 35, was knocked down by an automobile as she was stepping off a street car. She came under our observation four days later, complaining of dyspnea on lying down. She maintained the sitting posture constantly. Eating caused a feeling of fulness in the left hypochondrium and was frequently accompanied by a choking sensation.

Orthopnea was present. The cardiac pulsation was not visible on the left side, but the apical beat was observed in the sixth right interspace 4 cm. to the right of the midsternal line. The left border of the heart, determined by percussion, was 2 cm. to the left of the midsternal line, and the right border, 4 cm. There was a rough systolic murmur over the apex. The pulse ranged around 120. In the sitting posture, the blood pressure was 134 systolic, and 84 diastolic.

Expansion of the left thorax was limited. The diaphragm was 3 cm. higher on the left than on the right, and the excursion was 3 cm., in contrast to 6 cm. of the right side.

There was a moderate degree of abdominal distention. Tenderness was generalized, but there was no rigidity. No organs were palpable.

Fluoroscopic examination revealed a dextrocardia with the arch of the aorta in a normal position. The upper level of the stomach was seen at the border of the fourth rib on the left side, in the standing position. When the stomach was partially filled with barium, this was brought out more distinctly. The stomach emptied with moderate rapidity.

After a week of observation, we decided that the extreme discomfort, the inability of the patient to be active, and the possibility of further complications indicated operation.

At operation, we blocked the sixth to tenth left intercostal nerves with 2 per cent. procain solution. The area of the eighth left intercostal space was then injected down to and including the pleura. An incision about 10 cm. long was made in the eighth left intercostal space, beginning at the posterior axillary line and extending anteriorly. This incision was carried down to the pleura. The patient became very unruly, and in spite of additional injection of the pleura, an ether anesthetic had to be given. The pleura was then incised. At this moment the heart and respiration ceased. The operation was at once stopped and resuscitation unsuccessfully attempted.

Postmortem examination revealed a linear tear of the right side of the pericardium through which the heart protruded into the right pleural cavity. A fibrinous exudate was present between the visceral pericardium and the pleura. There was a tear in the left side of the diaphragm easily admitting the hand. In this opening were the stomach and some small intestine extending up into the pleural cavity. There was a small laceration of the diaphragmatic surface of the liver and some bloody fluid in the peritoneal cavity.

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* From the service of Dr. J. R. Buchbinder.

1. Allan, J.: Rupture of Pericardium, Fracture of Pelvis and Rupture of Urethra, Lancet 2: 331, 1878.

Special Article

EPIDEMIC (LETHARGIC) ENCEPHALITIS AND ALLIED CONDITIONS

SIMON FLEXNER, M.D.

NEW YORK

(Concluded from page 1693)

EXPERIMENTS IN TRANSMITTING ENCEPHALITIS TO ANIMALS

Early in the epidemic outbreak of encephalitis, Dr. Amoss and I undertook the transmission of the disease to animals. The first inoculations performed in the winter of 1919 were made with emulsion of human brain into *Macacus rhesus* monkeys. Materials injected from several fatal cases were without positive result. The effort to secure transmission was continued as opportunity offered, and following the publication of the Mount Sinai experiments, to the materials previously employed for inoculation were added filtered nasopharyngeal washings, filtered extracts of nasopharyngeal mucosa, and cerebrospinal fluid; and the rabbit was substituted for the monkey, as constituting a more susceptible animal species. These attempts, continued through 1920, 1921 and 1922, failed consistently to yield an unequivocal result. Now and again an encephalitis or a meningitis would follow on the intracerebral inoculation of rabbits, but they proved, on close study, to be accidental or intercurrent infections of common bacterial origin.

The at least occasionally successful transmission by others with cerebrospinal fluid of a reinoculable disease in the rabbit led us in the winter of 1922 to 1923 to extend the scope of our study, and through the cooperation of the staffs of the Presbyterian Hospital and the Neurological Institute of New York, a wide variety of such fluid was obtained for inoculation. The cases from which the fluid was derived included such as were diagnosed as epidemic encephalitis; other fluids were taken from cases of neurosyphilis, brain tumor, multiple sclerosis, and a miscellany of nervous and other affections. Coincidentally with this enlarged study in New York, Amoss carried out similar inoculations at the Johns Hopkins Hospital in Baltimore.

It is of interest to record that in the four years during which this investigation was pursued, the number of cases of so-called epidemic encephalitis from which material of one kind or another was obtained for purposes of inoculation numbered two or more score, and that the total number of cerebrospinal fluids from all sources injected exceeded a hundred,[3] with, it is to be noted, a single instance interpretable as a successful infection.

The method employed to secure transmission was the usual one; namely, subdural or intracerebral inoculation of several rabbits, never fewer than two, and with materials coming supposedly from cases of epidemic encephalitis, five or six. As much as 0.35 c.c. of fluid could be safely injected.

The ease with which transmission in this one instance was secured has in this connection quite unusual interest. The patient, a man, aged 51, had been under treatment for neurosyphilis at the Presbyterian Hospital since 1921. He suffered also from aortitis, aortic insufficiency and other symptoms. The syphilitic infection had been acquired sixteen years before. There was at no time any question of epidemic encephalitis; indeed, the patient was ambulatory, coming into the hospital for treatment and then going out. The treatment consisted of mercury and arsphenamin, including arsphenaminized serum injected intraspinally.

With the clear cerebrospinal fluid from this case, which showed globulin by the Noguchi test and was sterile in ordinary cultures, two rabbits were injected intracerebrally, Jan. 4, 1923, each receiving 0.35 c.c. One rabbit developed no symptoms. The other was noted, January 13, to be tremulous and to turn in circles to the left (the side of inoculation), and to keep the head inclined backward and to the left. The rectal temperature was 105.6 F. The jaws were moved with gnashing, but there was no salivation. Death occurred at 3 a. m. on the 14th.

With the brain of this animal, which showed no bacteria in films or ordinary cultures (agar plates; fragments in deep bouillon), other rabbits were inoculated successfully. The transmission of this strain of "virus" has been continued regularly and without failure practically through many generations. It is effective no matter how inoculated; namely, subdurally, by way of the cornea, in which it excites a keratoconjunctivitis, or skin, in which it induces vesiculation, the nares, blood, testis, etc. Salivation, urine retention, paralyses and convulsions are among the regular effects of the inoculations at the present time.

This strain of virus, which we shall call "Beckley," is now in its twelfth generation of unimpaired activity. It is filtrable, glycerol resistant, and noncultivatable either under aerobic or anaerobic (Smith-Noguchi) conditions, as far as determined. Feb. 2, 1923, a second specimen of cerebrospinal fluid was obtained from the same individual, with which five rabbits were injected intracerebrally, 0.35 c.c. again being used. This fluid again gave a strong globulin reaction. All these rabbits developed temperatures of 104 + F., and showed retention of urine, and even fleeting salivation. But these symptoms, if symptoms they were, subsided quickly, and none of the animals succumbed. Three months later they were susceptible to inoculation with so-called "herpes virus."

HERPETIC KERATITIS

Into this account of the experimental investigation of encephalitis which we are following there must now be injected what may at first sight appear to be a foreign and remote topic. As long ago as 1913, Grüter discovered that the condition known as herpetic keratitis in man is communicable by inoculation to the abraded cornea of the rabbit. Although Grüter did not publish this important finding until 1920, it became known, so that it was confirmed by Löwenstein and Siegrist, the former, indeed, making a first communication in 1919. Löwenstein's contribution alone need detain us now, because he identified all forms of febrile herpes by the Grüter corneal inoculation test and definitely separated them from herpes zoster, the vesicular contents of

3. This number does not include a series of eight specimens of cerebrospinal fluid kindly supplied us by Dr. J. A. Douglas of Winnipeg. The vicinity of this city suffered a severe outbreak of epidemic encephalitis in January, February and early in March, 1923. Particular inquiry elicited the important fact that no relation to influenza was observed, and the latter disease was conspicuously absent. The cerebrospinal fluids were sent by post, so that an interval of about twelve days elapsed between their collection and injection into rabbits. The fluids were first determined to be sterile in ordinary cultures, and were then inoculated subdurally into twenty rabbits. In no instance were infection and subsequent encephalitis provoked.

which are innocuous. He also determined some of the properties of the active material of febrile herpes, such as heat lability, nonbacterial nature, infectivity under high dilution, and glycerol resistance. But what is particularly important is his discovery that in the rabbit, in contradistinction to man, the cornea that has recovered from the experimental herpes is refractory to a subsequent inoculation. He drew attention also to the fact that the active material of febrile herpetic eruption (which he speaks of as "virus") must have a wide distribution in the healthy body, since it so readily accumulates and multiplies in the eruptions. No matter what their inciting cause—whether a febrile disease, a drug (e. g., arsphenamin) or a foreign protein, (e. g., milk injection)—the inoculability is the same.

At this early period in the experimental study of herpes, Doerr, whose interest seems to have been excited by Siegrist, made an observation which has since proved significant. He states that he found by cross resistance tests that corneal and lip herpes are immunologically identical, and especially that the corneal inoculated rabbits occasionally develop general nervous symptoms, such as turnings to the side of the affected eye, tremors, transitory paraplegias, and excessive salivation, in which intances death, often sudden, supervenes. In other words, Doerr observed the symptoms now recognized as indicating the existence of an active encephalitic process in rabbits, and a little later, with Vöchting, on the basis of printed reports alone, identified this general herpetic state with the pathologic complex described shortly before by the Mount Sinai Hospital workers and Levaditi as indicative of experimental epidemic encephalitis of the rabbit.

The two lines of experimental investigation had now converged, and have continued ever since to move closer and closer together. Thus, Blanc and Caminopetros found that the brain of the herpetic encephalitic rabbit provoked corneal herpes, and Levaditi and Harvier that the brain of the epidemic encephalitic rabbit equally provoked a keratoconjunctivitis. Moreover, Levaditi, Harvier and Nicolau showed that in both conditions the brain was capable of inducing vesiculation of the abraded skin of the rabbit, while Doerr and Schnabel established the important fact that the herpetic and the encephalitic viruses in the rabbit cross-immunized against each other. In other words, the two sets of active materials were proved not only to be pathologically and immunologically analogous, but by the available biologic tests to be indistinguishable.

And so the subject has remained, except that each new feature brought to light with respect to one kind of virus is found to apply to the other kind. There are no essential distinctions known as regards the symptoms provoked in rabbits and other rodents, the histologic lesions produced in the cornea, skin or brain, in mode of infection, in manner of recovery and resistance to cross infection after recovery, except in one particular, namely, that in relation to the herpes virus, of which many strains have been investigated as compared with the few studied of the so-called encephalitic virus, stronger and weaker; that is, more or less readily infective and invasive specimens have been secured. And yet there is at least one record of a weak strain of encephalitis virus being obtained by Harvier and Levaditi, although so little study was given it that its real nature remains in doubt. A second example of a weak virus may be found possibly in the report of Netter, Cesari and Durand, in which it is stated that a "virus" was recovered from the brain in a case of encephalitis fifteen months after its onset. This virus, strangely, was irregularly active when introduced into rabbits with the brain tissue of succumbing animals, while the secretion of the salivary gland of the infected animals was uniformly virulent.

CONFLICTING RESULTS

It is not to be supposed that many more investigators than those whose work has already been dealt with have not devoted themselves to the experimental reproduction of epidemic encephalitis. I have already referred to the large number of unsuccessful inoculations made by Amoss and myself, and it is quite certain that not a few others have had similar unfruitful experiences. There remains, however, an intermediate group of experimenters whose published results, on the surface appearing positive, may prove not to have been so. To this group we must now devote brief attention.

The first whose discordant results should be considered are the Italian investigators Ottolenghi, d'Antona and Tonietti, who carried out a series of inoculations on guinea-pigs with the cerebrospinal fluid and blood from thirteen cases of epidemic encephalitis. The injections were made into the peritoneum and the brain. The symptoms induced were vague; somnolence is said sometimes to have been present. Death occurred in from five to thirty-five days after inoculation. The brains of the guinea-pigs that succumbed were infectious for other guinea-pigs and for the cat. Human cerebrospinal fluid instilled into the nose of the animal was effective, and the "virus" was glycerol resistant and remained active a long time in the spinal fluid. Of 215 guinea-pigs inoculated, only thirteen survived. Now, since all other investigators have found the cat insusceptible and the guinea-pigs more resistant than the rabbit, which, it will be recalled, responds to the primary inoculation with such difficulty that several animals are employed for a given sample of encephalitis material, the strong presumption is that the results reported by Ottolenghi and his associates are of extremely dubious nature, and this conclusion is strengthened by the absence in the brain of the animals succumbing to inoculation of the histologic lesions of a definite encephalitis.

Another Italian observer, Bastai, has reported the successful inoculation of the cat with human encephalitis material, and also the cultivation of a "virus" that proved slightly infectious for the monkey and more highly infectious for the rabbit, the latter animal responding to inoculation by way of the brain, eye, peripheral nerves, skin, etc. The eye and skin applications were said to induce herpetic vesiculation. The brain and the blood of the succumbing animals were in turn infectious. It seems necessary merely to remark that the findings described are wholly discordant, and to suggest that the effects described could well have been obtained by inoculation with a moderately virulent staphylococcus.

The outstanding instances of a series of experimental findings which fail to harmonize with those of the Mount Sinai workers, Levaditi, Doerr and Schnabel, are those of Kling and his associates. This investigator has studied the problem of epidemic encephalitis in a comprehensive way. Utilizing the isolation of certain Swedish communities, as his distinguished predecessor

Wickman had done for epidemic poliomyelitis, he endeavored to trace the connection between cases of epidemic encephalitis in a manner more complete than can be accomplished for populations in ordinary state of flux. The conclusions arrived at from the study thus carried out were all in favor of the personal communicability of the encephalitis; they included also the operation of the factor of the abortive or ambulant type of cases of the disease, numerically far more frequent than the frank and obvious cases, and, according to him, more active in spreading the infection. It lies outside the province of this article to discuss at any length the epidemiology of the encephalitis. I wish merely to raise a question in this connection, which time and greater knowledge alone will enable us to answer. The question is whether with a disease, the manifestations of which are so manifold as are those of epidemic encephalitis as now conceived, we are justified on purely clinical observational grounds alone in asserting a high degree of susceptibility among the general population for the mild and indefinite abortive forms, at the same time that we assume a low degree of susceptibility for the obviously severe types of the disease. My own inclination is toward holding all such decisions in abeyance until the etiology and means of diagnosis of the malady are more firmly established.

To return to our main theme. Kling and his associates repeated the experiments with rabbits as previously made in the United States and France. He injected intracerebrally the cerebrospinal fluid, emulsion of brain tissue, and filtrates of nasopharyngeal and intestinal washings of cases of epidemic encephalitis. With all these materials he secured infection, but the experimental disease thus induced differed essentially from that described by his predecessors.

All the earlier investigators who had claimed success based their statements on the induction of an acute disease. Kling excludes all these and bases his claims on the induction of a disease not with rapid but with slow evolution, in which weeks and months of incubation replace the days of previous observers. This distinction, as will be apparent, at once removes the similarity and possible confusion with herpetic encephalitis. And in keeping with the greater duration of encephalitic processes preceding the appearance of symptoms or of death, the histologic lesions differ; all the signs of acute infection, such as the presence of polymorphonuclear leukocytes in the brain tissue, are wanting. The lesions are mononuclear, even polyblastic in character; they are also nodular as well as perivascular and diffusely infiltrative, and although no counterpart is known in human cases of encephalitis, the nodules are sometimes in process of degeneration with definitely necrotic centers. Finally, the lesions have a wide distribution; on the whole, the basal ganglions are commonly affected, and in those parts the lesions are chiefly perivascular or minutely focal or diffuse, while in the cerebrum the larger perivascular infiltration and the larger nodular lesions prevail. However, there is greater variety of lesion than regularity of distribution to be made out, and a lesion common in one part may also appear, although rarely, in another part of the brain.

This brief account, based both on Kling's descriptions and on his published photographs, is entirely out of keeping with the account given for the acute encephalitic and herpetic lesions in the brain of rabbits. In still another way does Kling's finding differ essentially from those of Levaditi, Doerr and Schnabel; namely, in that the rabbit brain showing lesions fails on inoculation of the abraded cornea to induce keratitis. This difference emphasizes the distinction from herpes, although Doerr and Zdansky try to minimize it by reporting a partial success of their own with a specimen of glycerolated "virus" sent them by Kling. On the other hand, the specimen did not excite encephalitis on subdural injection. It is sufficiently clear, therefore, that whatever it may prove to be that Kling and his associates have been dealing with in their experiments, a fundamental difference in result has been disclosed that must be explained before the etiology of epidemic encephalitis may be accepted as settled. And what has been stated about the studies of Kling may be said also of the results, on a far smaller scale, reported from Warsaw by Szymanowski and Zylberblast-Zand, and from Belgium by Bessemans and Van Boeckel.

REACTIONS OF THE RABBIT

An impasse has now seemingly been reached in which two sets of conflicting experimental results stand opposed to each other. As a matter of fact, the situation is not so complex and discouraging as might at first sight appear, and it is not insusceptible of being in material measure cleared up by the application of facts not so generally known to experimental pathologists as could be desired.

The conflict centers about the chief laboratory animal employed in the experimental study of epidemic encephalitis. The rabbit, as we have seen, reacts in divers ways to the implantation of the supposed virus of encephalitis. One set of inoculation effects is superficial, and consists of vesicular lesions of the abraded cornea and skin which are indistinguishable from the corresponding lesions induced by the virus of herpes. Another set of the inoculation effects is general or systemic, and expresses itself in symptoms resulting chiefly from involvement of the central nervous organs; these, again, are the same, whether arising from the virus of encephalitis or of herpes.

The superficial lesions of cornea and skin are histologically as well as clinically obvious and characteristic; not so, however, all those of the brain, and for the reason that it happens that, at times, the brain of the domestic rabbit is the seat of pathologic changes already existing at the time the virus inoculations are made. These changes, not having given rise to symptoms, have been unsuspected, and hence in the past have been revealed accidentally by the microscope. To the uninitiated, they have been the source of mistaken interpretation, as in the instance of Reasoner, who regarded them as evidence of *Spirochaeta pallida* infection. Just now they would seem to be misleading Kling and some other investigators of epidemic encephalitis. There can be no doubt that the "spontaneous" lesions originate in some infectious disease or process common in the domestic rabbit which, having run its course, leaves a more or less permanent defect behind. In this respect there is analogy between the hepatic cirrhosis and the focal encephalomeningitis of the laboratory rabbit.

Bull, and later Oliver, have drawn attention to these accidental brain lesions. Brown and Pearce and Amoss and I, at the Rockefeller Institute, have become familiar with them from frequent observation. There seems little doubt that certain stocks are more numerously affected than others. I have come to doubt their complete absence from any considerable number of the laboratory rabbits.

At my request, Dr. McCartney made a systematic examination for the lesions of more than 300 rabbits from the stock of the Rockefeller Institute. He determined their presence in about one half. This high percentage may be unusual, or may be explained by the thoroughness of the examination. Portions from the cerebrum, central ganglions and medulla were regularly sectioned and studied. In other words, McCartney treated these animals as he would have done had they been the subject of actual experiment. The sources of the rabbits examined were various: accidental death (from snuffles, etc.), healthy individuals killed for normal organs, and others used in miscellaneous experiments, such as tumor transplantation, and *Spirochaeta pallida* infection. The presence of the lesions was sometimes ascertained by means of frozen sections, and the brain emulsified and inoculated subdurally into healthy rabbits. No evidence of a communication from one to the other was obtained in this manner.

The observations of Bull and Oliver, and of McCartney especially, have just been confirmed in an interesting way by Twort, who connects the latent brain lesions with a particular kidney affection in the rabbit which, on theoretical grounds, he attributes to a filter-passing virus infection. Twort thinks that he has succeeded in communicating the disease, by inoculation of brain tissue, to a mother and four young rabbits. In my opinion this question of transmission is still to be regarded as an open one.

The accidental or spontaneous lesions consist of a meningo-encephalitis affecting the cerebrum, but more often the basal ganglions and the medulla. The tissues are not everywhere affected, but the lesions tend to be focalized. Perivascular involvement is frequent. The larger, more circumscribed nodules are clearly associated with proliferation and with emigration of cells. Degeneration, even necrosis of the centers, of the latter kind of lesions is encountered. The infiltrating and other cells are mononuclear and polyblastic in type. Polymorphonuclear cells are conspicuously absent.

I have compared these accidental lesions with the published reports and photographs of Kling and his associates and of the Mount Sinai workers. They are often significantly alike. The agreement is more perfect in the case of the Swedish investigators, who dealt only with animals surviving inoculations weeks and months. The Mount Sinai investigators dealt with acute encephalitic conditions also, with which the older preexisting lesions might or might not be associated. It is worth noting here that Kling records the fact that he discovered the encephalitic lesions in about one half (50 per cent.) of the rabbits exposed to the inoculations.

RELATIONSHIP OF HERPES VIRUS AND THE VIRUS OF ENCEPHALITIS

We have become used to attributing epidemics of particular diseases to the operation of single, specific microbic incitants, whence the main interest has centered about the nature of the special etiologic agent in epidemic encephalitis. In spite of a large number of experimental and other studies, agreement on this vital point has not been reached. Transmission to animals of a disease bearing certain resemblances to epidemic encephalitis has, indeed, been accomplished, but under circumstances so infrequent and capricious as to be extremely disquieting. These virtually haphazard results are not sufficiently accounted for by Doerr's suggested analogy with typhus fever infection in the guinea-pig, since, although failure here is not infrequent, success is not uncommon, and all experienced investigators fare alike.

A still greater difficulty arises from the obvious similarities existing between the supposed virus of encephalitis and the proved virus of herpes. This close relationship introduces a strange riddle into the conceptions of the etiology of the encephalitis, on the solving of which rests the fate of the views of the Mount Sinai Hospital workers, Levaditi, Doerr, Schnabel and still others. The infection of rabbits with the virus of herpes follows as easily and as regularly as the implantation of the virus of encephalitis is accomplished with difficulty and uncertainty. But once the latter is effected, the further transmission is as simple in one case as in the other.

The fact that so many of the successful instances of inoculation of the encephalitis virus have been accomplished with nasopharyngeal secretions cannot be without significance. Were these examples set aside and those alone accepted as trustworthy in which the infection was secured with materials of central nervous origin, the already small number of positive transmissions would sink to a still lower level. Hardly any one will contend that the nasopharyngeal secretions, even when filtered, constitute a simple inoculum. Now it happens that Doerr early discovered in these secretions a virus identical with the virus of herpes. Levaditi, Harvier and Nicolau, a little later, made a more systematic study of these secretions in healthy subjects, and arrived at the conclusion that 80 per cent. of such persons carry a virus of attenuated affinity for the rabbit cornea, and also that healthy persons in contact with cases of encephalitis may carry in their buccal secretions the more virulent encephalitis virus. They claim to have detected two strains of the latter among fifteen persons examined, of which one was weak and the other strong. Levaditi distinguishes the two kinds of active materials or viruses contained in the nasopharyngeal secretions as "salivary keratogenic" and "salivary encephalogenic," according as they resemble, on the one hand, the herpes virus or, on the other, the encephalitis virus. Since, however, only one of the encephalogenic strains proved durably effective, it is not evident that Levaditi's findings extend appreciably those of Doerr. Both findings readily accord with the notion of the existence of herpes virus carriers which common experience renders highly probable.

We have seen that the virus of herpes and the supposed virus of encephalitis cannot be distinguished by infection tests, by cross immunity tests, or by chemical tests. Strong and weak strains of both exist; infection with a weak strain protects from inoculation with a strong strain; and both resist glycerol, and both succumb to bile. Even Levaditi's "salivary keratogenic" virus protects against his strongest strain of encephalitis virus.

Protection tests have also been made with human blood serum derived from patients who have passed through attacks of epidemic encephalitis some time before. Amoss and I have found that rabbits that recovered from both the herpes and the encephalitis virus[4] infections yield serum that neutralizes indifferently the two viruses. We have tested also several samples of convalescent human serum taken two or three years after the acute attack of encephalitis. As compared with a few samples of normal human serum,

4. The encephalitis virus consisted of the Beckley strain and the two strains kindly sent by Dr. Levaditi and Professor Doerr.

the former was somewhat more protective. The results are not constant and are not conclusive; hence a much larger series of tests is obviously called for. So far as our tests are susceptible of interpretation, they indicate no difference between the herpes and encephalitis strains of virus. Levaditi and Harvier also tested some half dozen convalescent serums taken from one month to one year after the attack of encephalitis. Only the one year serum was neutralizing to the encephalitis virus; the remarkable statement is made that the other samples promoted, rather than retarded infection. Finally, Kling has reported a series of rather ambiguous tests made with convalescent serum and his variety of the encephalitis virus, which he regards as positive and on the basis of which he predicts a serum therapy of epidemic encephalitis.

It is, therefore, far easier to identify with than to distinguish from each other the virus of herpes and of encephalitis. Febrile herpes in man is known to be both auto-inoculable and homo-inoculable, and it has now been determined that herpes implanted in the rabbit is reinoculable on the skin of man. Furthermore, Schnabel has shown on himself that the virus of encephalitis, as contained in the brain of the rabbit, induces herpetic skin vesicles. The minute histologic studies of the lesions in the rabbit induced by the herpes and by the encephalitis viruses have disclosed the occurrence of intracellular inclusion bodies regarded by some investigators, probably erroneously, as microorganismal, but indistinguishable in the two conditions.

Since the virus of herpes and of epidemic encephalitis has been brought into so close a relationship, it is pertinent to inquire whether that of herpes has been discovered in the central nervous system in man. The means employed for the detection have been to inoculate cerebrospinal fluid or brain tissue removed post mortem, from patients having herpes, into the eye or brain of the rabbit. The number of examinations carried out in this manner is still relatively small. Two investigators have reported successful inoculation of the cornea in rabbits with cerebrospinal fluid; the others have recorded only failures. Careful study of the protocols of the former does not bring conviction that experimental herpetic infection has certainly been induced. Amoss has tested the cerebrospinal fluid from three patients with marked febrile herpes, and Doerr and Zdansky have employed a number of brain specimens, both without result.

In these brief statements are contained the bare facts of the case. If I were asked to comment on them, I should be inclined to say that they signify only what they affirm and no more. Just as it has been abundantly proved that it is difficult to detect by inoculation a virus in the nervous system of cases of encephalitis, I should expect that it will prove to be difficult to discover there the virus of herpes. The only way to determine ultimately whether the virus of herpes receives sometimes a general distribution throughout the humors and tissues of the body of man is to continue the search for it, and with an assiduity at least the equal of that devoted to the finding of the virus of encephalitis.

THE OUTCOME

We have reached a natural halting place in this discourse. I should beg the indulgence of my audience for so long a presentation, were the circumstances different from what they are. The world has been sorely beset by an unusual epidemic disease which it is the office and the duty of physicians, clinicians and pathologists alike, to study with utmost zeal. Opinions may differ as to whether epidemic encephalitis was definitely known to our predecessors; there can be no such difference of opinion as to the unprecedented extent and destructiveness of the recent pandemic. Experience has shown that epidemic diseases once introduced do not, as a rule, suddenly disappear from a country. I fear, therefore, that we shall have occasional visitations from this one for some years to come. The hope, then, of control lies in a fundamental understanding of the nature of epidemic encephalitis. It would, in my opinion, be very unfortunate should we adopt a premature conviction regarding the etiology of the disease. The recent investigations to which attention has been directed have undoubtedly thrown open a wide new field of bacteriologic research to exploitation. Within it lies perhaps the solution of the problem of the causation of epidemic encephalitis—not yet, as I believe, an accomplished fact.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

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SATURDAY, NOVEMBER 24, 1923

DIET AND INTESTINAL PROTOZOA

The digestive tube is the passageway not only for food but also for various types of micro-organisms. At birth, the enteric tract is free from the latter, so that its contents are sterile. The alimentary canal is soon invaded by living forms, and never again attains a freedom from them. With the advent of modern bacteriology, concern soon arose regarding the effects of the micro-organisms on the contents of the gastro-intestinal tube. Attention was directed to the kinds and numbers of the invaders, to their putrefactive and fermentative potencies, and to the possible physiologic action of the chemical products that may arise. Intestinal putrefaction became linked with "autointoxication" by substances of alimentary bacterial origin. It seemed for a time as if many of the minor ills of human kind might be charged to the products of putrefaction arising in the bowel.

Meanwhile there has come a better realization of the fact that the alimentary bacteria are themselves sensitive to the food content of the intestine—that they not only can alter the organic materials with which they may come into contact but also are affected by their chemical environment. It makes considerable difference, with respect to the survival of certain races of bacteria, whether their pabulum consists largely of protein or of carbohydrate; whether the conditions engendered by the contending micro-organisms in the anaerobic reaches of the bowel tend to become acidic, neutral or alkaline. Many micro-organisms are extremely sensitive to the reaction of the medium in which they are placed. The flora of the healthy stomach consists almost entirely of organisms swallowed. The gastric juice restrains bacterial multiplication, and destroys most of the bacteria that the gastric content may receive. The secretions of the liver, the pancreas and the duodenal mucosa are quite free from bacteria, and tend to "flush out" the upper portion of the small intestine; so that, in health, the duodenum is quite free from living bacteria in the intervals when food is absent, and it contains relatively few bacteria during digestion.[1] Only in the lower portions of the large intestine, where the results of progressive absorption of water and intestinal contents become conspicuous, do bacteria accumulate in larger numbers. Most persons fail to realize, however, that the vast majority of the alimentary bacteria die in the bowel, so that the feces represent in no small measure the accumulated dead bodies of microbial forms. A bacteriologist has estimated that the daily excretion of bacteria in the feces of healthy man may average thirty-three million million cells.

The effects of various types of diet on the bacterial flora of the intestine have been ascertained with considerable detail, in particular with reference to the acidophilic micro-organisms.[2] A summary of the current beliefs was given in a recent issue of THE JOURNAL.[3] To a considerable degree, the lactic acid-forming species are antagonistic to the putrefactive anaerobes, and tend to supplant them as the diet affords opportunity for the successful implantation and survival of the acidophilic types. Hegner[4] of the School of Hygiene and Public Health at the Johns Hopkins University has begun a study of the effect of changes in diet on the fauna of the alimentary tract, notably the species of intestinal protozoa that may inhabit it. The possible practical importance of such an undertaking is apparent when one recalls that no therapeutic agent has yet been reported for dealing successfully with the intestinal flagellate infections of man.

The intestinal contents may, of course, be changed directly by variations in the chemical make-up of the food intake. As a consequence, the degree of stimulation of the secretory glands pouring into the intestine may be varied; and there may be profound modifications in the comparative numbers of various sorts of bacteria, their activities, and the character of their secretions or products of microbiotic metabolism. Apparently, this bacterial factor plays a significant part in the establishment of the flagellate endozoal parasites. In Hegner's experiments on rats, for example, no increase was noted in the numbers of trichomonads, so long as the predominant type of bacteria in the cecum was of the putrefactive type; but, as soon as a change to the acidophilus type was brought about by a normal diet to which dextrin was added, trichomonads reappeared in large numbers. It is of interest to note, in this connection, that protozoa are abundant in the digestive tract of many animals that live on vegetation, and are less numerous in carnivorous animals. The optimal habitat of some of the common intestinal flagellates is also likely to vary with modifications of the

1. MacNeal, W. J., and Chase, A. F.: A Contribution to the Bacteriology of the Duodenum, Arch. Int. Med. **12**: 178 (Aug.) 1913.

2. A summary is given by Rettger, L. F., and Cheplin, H. A.: A Treatise on the Transformation of Intestinal Flora, Yale University Press, 1921. This contains an extensive bibliography.

3. Lactic Acid-Producing Organisms and Preparations, J. A. M. A. **81**: 831 (Sept. 8) 1923.

4. Hegner, R. W.: The Effect of Changes in Diet on the Incidence, Distribution and Numbers of Certain Intestinal Protozoa of Rats, Am. J. Pub. Health **3**: 180 (March) 1923.

mediums and bacterial flora within the intestine. Enough evidence has already been gathered to give promise of interesting developments in a comparatively new field of investigation.

ABSORPTION FROM THE URINARY TRACT

There is at present no comprehensive vantage point from which the phenomena of absorption from the mucous membranes and epithelial surfaces of the body can be surveyed. Attempts at generalization have rarely succeeded, because a uniform principle of function applicable to all the situations has not yet been discovered. A good illustration of the confusion confronting the student of absorption is afforded by the alimentary tract. The intestine is notably a region in which substances in solution can readily penetrate the lining membranes and thus finally enter the blood stream. Yet the gastric mucosa, existing in almost direct continuity with that of the lower reaches of the bowel, is demonstrably impervious not only to products of digestion but even to the universal solvent water. The nasopharyngeal surfaces also have varied absorptive capacities. The conjunctival membranes and the skin are in marked contrast with respect to their permeability to drugs. Such illustrations suffice to indicate the unwisdom of attempting any statement of universal application in the present state of our knowledge.

The possibility of unlike absorptive powers in membranes closely related in both structural and topographic respects has an important bearing in practical ways as well as from more purely theoretical standpoints. Until recently, it has been customary, for the most part, to consider the genito-urinary surfaces and their lining epithelial membranes from a uniform standpoint with respect to their physiologic permeability. The subject has attained a growing importance because the regions involved have become more readily approachable through the improvement in instrumentation and the technic of examination of the urinary passageways. Not only the bladder but also the ureter and pelvis of the kidneys can be explored with considerable facility by the modern urologist; and he does not hesitate to introduce foreign materials, such as instruments and chemical products, into the formerly hidden recesses of the renal excretory system. Catheterization of the ureters for diagnostic ends, therapeutic irrigation of the bladder and its pathway appendages, introduction of solutions and mixtures for pyelography and other types of roentgen-ray examination—these are some of the prevalent procedures in the urologic clinic.

The urinary bladder has long sustained the reputation of being an organ from which little or no absorption can take place. This conception has been extended to include not only water and substances in solution in the urine, but also particulate forms, such as bacteria. Teleologically, the impermeability of the bladder in these respects is readily appreciated. It would be physiologically futile to store excretory products in a structure whence they could readily be returned to the blood from which they had been eliminated. Such reasoning as to purpose in Nature sometimes encounters the opposition of seemingly contradictory facts. In this case, however, there is considerable experimental evidence to show that foreign compounds introduced into the bladder are not promptly absorbed. Hence the practice of irrigating the organ with drugs that might do harm if they found their way into the body at large. There is an accepted belief among physicians that the antiseptics, styptics, local anesthetics, sedatives and stimulants of the mucous membranes exert a purely local or topical effect.

Macht,[1] in particular, has pointed out in his studies at the Johns Hopkins University that the bladder and urethra behave quite differently with respect to their permeability. Whereas the absorptive power of the bladder is very slow, it is marked from the urethra, being more efficient and rapid from the posterior than from the anterior portion. Macht has reminded us that a review of clinical evidence agrees with the experimental findings described above. Poisoning through the urinary tracts has been reported and is not uncommon. On studying such cases, it will be found that absorption of drugs or poisons in them occurred for the most part through the urethra. This holds good not only in the case of the male, but also in that of the female. Absorption from the prostatic urethra in urologic practice is not unknown. In gynecology, poisoning from the short female urethra has also been described.

The latest observations of Magoun[2] at the Mayo Foundation are also in accord with this. According to them, the absorptive powers of the various portions of the urinary tract differ. The kidney absorbs dyes and bacteria to a marked extent. The ureter and urethra absorb these pigments readily, but the bacteria less readily. The bladder, on the other hand, absorbs a very small amount of dye and no bacteria.

The possibilities of absorption from some regions in the urinary tract must be important clinically. It has been suggested, for instance, that in cases of pyelitis the phenomena of chills and fever may be due to the absorption of urine and bacterial toxins. In contrast with the bladder, the kidney, once infected, may act as a focus for secondary bacteremia. Cystoscopic manipulations thus present obvious dangers in the transfer of objectionable materials either into the renal pelvis or into the urethra. To what extent inflammation or injury of the mucous surfaces may

1. Macht, D. I.: Concerning the Absorption of Drugs and Poisons from the Ureter and Pelvis of the Kidney, J. Urol. **2**: 481, 1918; On the Absorption of Drugs and Poisons from the Bladder and the Urethra, I, Absorption of Apomorphin and Morphin, ibid. **2**: 43, 1918; On the Absorption of Drugs and Poisons from the Bladder and the Urethra, II, Absorption of Various Alkaloids, Antiseptics, Local Anesthetics and Salts, ibid. **2**: 211, 1918.

2. Magoun, J. A. H., Jr.: Absorption from the Urinary Tract, J. Urol. **10**: 67 (July) 1923.

modify their normal physiologic properties cannot even be conjectured. The time has come to realize, with Magoun, that drugs introduced into the urethra, bladder, ureters or pelvis of the kidney, whether as opaque mediums, for roentgenologic procedures, or as therapeutic agents, are noxious in proportion to their capability of causing "local" irritation, to their toxicity, and to their absorbability.

ERNST SALKOWSKI, 1844-1923

A student of the history of medicine [1] has remarked that in the United States and Canada there are not many physicians who possess even a slight knowledge concerning the manner in which the science of medicine has attained its present power as an agency for good, or concerning the persons who played the chief parts in bringing about this great result. The day has passed, however, when the importance of having some familiarity with the lives and achievements of the "makers of medicine" can be overlooked with the excuse of the "youth" of our country and the unpreparedness of our educational institutions to present the biographic and historical aspects of the subject. Each age steps on the shoulders of the ages that have gone before. The value of each age, Sir Michael Foster once observed, is not its own but is in part, in large part, a debt to its forerunners. A familiarity with the lives and labors of those who gave something of a more permanent sort to medical progress not only lends human interest to the story of this development, but exerts an inspiration that should not be overlooked.

In the active world of today, we are all too prone to forget quickly. Novelties are accumulating at such a rapid rate in this generation that they become part and parcel of the daily life of science and practice almost before their origin and development have become impressed on those who have occasion to deal with them. Perhaps it will be a real service if, now and then, we remind ourselves of the deserts of some investigator who may have failed to attain the recognition or awaken the attention that his labors merit. In this spirit we refer to the recent death of Prof. Ernst Salkowski, for many years director of the chemical division of the pathologic institute at the University of Berlin. Few, indeed, are the persons to whom it has been granted to leave a record of such long, devoted service to medical teaching and research. His scientific activities began in the seventies of the last century and continued until the very year of his death, at the age of 79. It was Salkowski who, in 1876, demonstrated the significance of the excretion of phenols and explained their origin in putrefactive processes in the intestine; thus, Baumann's discovery of phenyl sulphates in the urine of man was supplemented with an explanation of the genesis of the aromatic radical therein. Salkowski, too, first gave an impetus to the study of autolysis, or autodigestion as it has been called —a process that has assumed large significance in pathology. One may recall the autolytic resolution of pulmonary exudates and the autolysis of certain tissues under aseptic conditions. Among various popular tests introduced by him, the reaction for the identification of cholesterol which commonly bears his name finds application daily in the clinical laboratory. Salkowski early discovered the antiseptic properties of benzoic acid, which has played a much discussed part in food preservation; and the use of chloroform as an antiseptic which does not interefere with enzymatic reactions was likewise one of his contributions to biochemical technic.

To physicians, however, these investigative results are overshadowed by Salkowski's discovery and description of pentosuria, in the last decade of the last century. The peculiarity of the excretion of a 5-carbon sugar, in contrast with the glucose of the diabetic urine, was soon demonstrated to be an anomaly of metabolism. The observation of the persistent elimination of a pentose without apparent detriment to the person concerned has emphasized the necessity of careful differential diagnosis of all cases that exhibit a "reduction test" in the urine. Most of these contributions have long since passed into the permanent possessions of present-day medical science. Let us not forget the part a modest worker played in their development.

1. Buck, A. H.: The Growth of Medicine, Yale University Press, 1917.

Current Comment

NEW EXPERIMENTS ON REJUVENATION

THE JOURNAL has commented on the experiments of Steinach and others in the rejuvenation of animals presumed to follow ligation of the vas. Recently Macht and Teagarden,[1] of Johns Hopkins University have performed similar operations on six rats, all more than a year old and showing definite signs of senescence. These were compared with two other animals used as controls. Fourteen additional rats were studied by special methods involving the use of animals operated on and adequate controls. The details of the method leave no doubt as to the scientific character of the experiments. After ligation, a number of the rats showed distinct improvement in general appearance and behavior. They were more active, and several developed a new coat of fur. These changes persisted only for several weeks, however, and the animals gradually relapsed into their usual senile state. Also distinct improvement in muscular coordination and muscular efficiency of the animals was noted, but this was temporary, lasting only a few weeks. It is the belief of the observers that all the changes noted seemed to have been the results of the operation; they assert, nevertheless, that this cannot be said positively without numerous additional experiments. This work would

1. Macht, D. I., and Teagarden, E. J., Jr.: Rejuvenation Experiments with Vas Ligation in Rats, J. Urol. **10**: 407 (Nov.) 1923.

seem to confirm the impression now prevailing that the various rejuvenation experiments constitute at best only a temporary stimulus, and that the inevitable result is relapse, if not, perhaps, a shortening of life because of additional burdens thrown on a senescent organization.

BACTERIA IN THE LUNGS

There is little doubt that micro-organisms enter the respiratory passages in enormous numbers through the mouth and the nasal orifices. Spray or droplet introduction is a demonstrable phenomenon. The myriads of bacteria that are discoverable in the outermost nasopharyngeal passages include many that have sustained a reputation for objectionable virulence. Sometimes they gain a sufficient foothold to start trouble. Influenza and pneumonia may be among the consequences of such a result. The surprising feature, however, is the fact that, with seemingly ever present opportunity for infection, the dire consequences rarely ensue. Can it be that, after all, bacteria rarely find their way into the recesses of the lungs where they can make trouble? Some writers believe that in health and under average conditions of dust exposure, micro-organisms only occasionally penetrate below the larynx, owing to the effective "filtration system" of the upper respiratory tract. It is also assumed that bacteria inspired into this region are usually eliminated by ciliary currents, die in situ, or are carried off in the lymphatic channels. We may now regard it as experimentally demonstrated on animals, most recently by Stillman [1] at the Rockefeller Institute for Medical Research, New York, that after the individual is subjected to a dense spray containing bacteria in suspension, the bacteria can actually reach the lungs. Stillman's studies indicate that the further history of the bacteria which have penetrated the lungs depends on the variety of micro-organism concerned. As regards the pneumococcus, the bacteria are disposed of within a few hours. On the question as to whether they are killed in situ, are taken up by leukocytes, or are carried to other parts of the body, the present experiments throw no light. Streptococci persist much longer in the lungs, so that their presence is far more likely to be followed by infection; in fact, a general septicemia usually attends the entrance of hemolytic streptococci, as they persist in the lung for a long time. The results with the bacillus of influenza were more irregular. In the animals tested, at least, it appears that factors other than the presence of the pneumococci in the lungs are necessary for infection. Even in the highly susceptible mouse, neither various modes of exposure to cold nor slight injuries to the mucous membranes through inhalation of irritating vapors or dusts lowered the local resistance. How infection is actually secured with the pneumococcus through respiratory channels thus remains obscure. Apparently this is one of the cases to which we may apply the oft quoted dictum: "While it is most important to know what kind of a disease the patient has got, it is even more important to know what kind of a patient the disease has got."

1. Stillman, E. G.: The Presence of Bacteria in the Lungs of Mice After Inhalation, J. Exper. Med. **38**: 117 (Aug.) 1923.

SAFE MILK

There is less public discussion about "safe" milk than there was a few years ago. Recognition of the importance of milk as a food and of the fact that it has to be carried long distances to market has established the principle that milk sanitation is a necessity. The procedures involved have at length become fairly well "standardized." Foremost are: 1. Prevention of all possible contamination by those handling the milk on the farm and in the dairy and by proper care of the cow. The utmost refinement of this plan is observed in the production of certified milk or its equivalent, produced and cared for under exceptionally sanitary conditions, and constantly supervised and inspected by a medical milk commission. 2. Pasteurization by one of a variety of commercial methods. Its use has greatly increased in recent years. The general tendency is toward the pasteurization of all market milk except the certified milk, and in some large cities it is compulsory. Tuberculosis is the commonest disease with which cows are affected, and therefore demands particularly careful consideration in connection with milk, although the other possibilities of milk-borne infectious agencies are not by any means negligible. It is pertinent to inquire from time to time, therefore, whether commercial pasteurization conducted, as it must be, on a large scale, actually destroys tubercle bacilli. A careful investigation [1] in a representative American city has shown the presence of these micro-organisms by actual inoculation tests in specimens of the raw milk of average quality delivered to city dealers. It was also demonstrated that pasteurization by the holding process between 142 and 148 F. for thirty minutes destroys the tubercle bacillus in the milk. The commercial process of rendering the milk safe can readily be made efficient; it should never be allowed to fail wherever dependence is placed on pasteurization.

REGURGITATION FROM THE URINARY BLADDER

There is no doubt today that hematogenous infection of the kidney can occur; indeed, it seems likely that this forms a not infrequent method by which disease becomes localized in this organ. In the days when the blood stream was supposed to be singularly free from bacteria, such a conception of infectious invasion of the renal structures seemed somewhat less probable than now. Viable micro-organisms are, in fact, known to be so readily excreted by the kidneys, even without any evidence of local disease, that some writers have actually classed the ridding of the body of infectious material as an important renal function. Transfer of bacteria from the circulating mediums of the body, however, is not the only way by which noxious agents might reach the kidney. It is a matter of every-day occurrence that the urinary bladder becomes infected through the external pathway of the urethra; it is a natural step to assume that through the ureters an almost equally available further channel is presented for reaching the pelvis of the kidney. It must be borne

1. Bartlett, C. J.: Does Commercial Pasteurization Destroy Tubercle Bacilli in Milk? Am. J. Pub. Health. **13**: 807 (Oct.) 1923.

in mind, however, in evaluating such a possibility, that the ureters are not merely possible conductors of urine. A stream of urine directed bladderward is flowing through them, and they are furthermore subject to muscular contractions of a wavelike character that oppose rather than favor the passage of anything in the direction of the kidneys. The possible regurgitation of vesical contents is therefore obviously a problem for study rather than mere speculation. The most recent investigators of the subject, Graves and Davidoff [1] in the Laboratory of Surgical Research at the Medical School of Harvard University, report that they have never seen antiperistalsis in a normal ureter, and in no way have they found it concerned with regurgitation; but the latter does occur, and it seems to depend on a variety of factors, among which a good bladder tone seems to be indispensable. Active pressure usually caused regurgitation; passive pressure never. The degree of ureteral activity seems to have little influence on the process. The upshot of these studies is to render bladder regurgitation accountable for ascending infections of the urinary tract, particularly in the case of vesical-neck obstruction. The decisive facts are based on animal experimentation; but they seem to be sufficient to warrant the conjecture that in man also the hematogenous route is not the only path for infection of the kidney.

1. Graves, R. C., and Davidoff, L. M.: Studies on the Ureter and Bladder, with Special Reference to Regurgitation of the Vesical Contents, J. Urol. **10**: 185 (Sept.) 1923.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Repair of Medical Building.—The board of revenue, November 6, announced that $6,000 would be spent for repairs on the old medical building of the University of Alabama, Birmingham, opposite the Hillman Hospital. When completed, the building will be used for the juvenile court as well as for the nurses' home and hospital.

CALIFORNIA

Southern California Society News.—At the semiannual meeting of the Southern California Medical Association in Los Angeles, November 2-3, Dr. Egerton L. Crispin, Los Angeles, was elected president; Drs. Rexwald Brown, Santa Barbara, and Allan L. Bramkamp, Banning, vice presidents, and Dr. Charles T. Sturgeon, Los Angeles, secretary-treasurer. ——At the annual meeting of the San Bernardino County Medical Society, October 2, the following officers were elected: Dr. John H. Evans, Highland, president, and Dr. Ernest O. J. Eytinge, Redlands, secretary-treasurer.

Hospital News.—A children's ward of forty beds will be erected at the Tulare-Kings County Tuberculosis Hospital, Springville, at a cost of $50,000.——Plans are being completed for a group of six reenforced concrete hospital buildings for the San Francisco Hospital in the Relief Home Tract, to be erected at an estimated cost of $1,750,000.——A solution of the problem of reducing the cost of hospitalization to the middle class is to be worked out by a committee whose appointment was approved by resolution, October 19, at the closing session of the annual convention of the hospitals of California. A resolution which authorizes the appointment of a committee to codify existing hospital laws and gather data on which new legislation covering state hospital regulations, to be enacted at the next session of the state legislature, was also unanimously adopted.——Drs. Milton H. Damron and Frank M. Mikels will open a number of emergency hospitals in Long Beach which will be operated to care for traffic and industrial injuries. The first unit of this system will be opened in the North Long Beach district. These hospitals will be known as the D. & M. emergency hospitals.——The Butts ranch property, north of Richmond, has been selected by the city council as the site for the Harding Memorial Hospital, for which a bond issue of $150,000 is proposed.——The Berkeley General Hospital, Berkeley, is being rebuilt. The first unit of five fireproof wings is nearing completion. When the new buildings are finished, the present structure will be moved to the rear and used for a nurses' school and home.——The new $10,000 nurses' home of the Emanuel Hospital, Turlock, was dedicated, November 2.

CONNECTICUT

The Diploma Inquiry.—THE JOURNAL is daily receiving reports of the state investigation into the medical diploma scandal that was recently exposed by the St. Louis *Star* (THE JOURNAL, November 17, p. 1698). Several hundred witnesses will be summoned before the grand jury's inquiry into charges of perjury and conspiracy. Dr. James E. Hair, secretary of the eclectic medical examination board, has returned from his farm in Townsend, Vt., coincident with the calling of the extraordinary grand jury. Harry T. Brundige, special investigator of the St. Louis *Star*, will be the first witness called as he (as "Dr." Harry Thompson) obtained the evidence which led to exposing the "mill." Members of the state board of eclectic medical examiners will then be called. The accused physicians will be called last. The Hartford *Daily Courant* states that more than twenty physicians who are suspected in connection with the frauds have left the state. Some of the suspects who, it is reported, will be called on to testify as to the legality of their medical diplomas are: Arnold H. Brein, Waterbury; Aaron Glass, New Haven; Saverio N. Pennine, New Haven; Nathaniel McCarthy, New Canaan; Bernard I. Kafka, Bridgeport; Paul V. Marzio, New Haven; Isidor Yochelman, who operates the Sydenham Hospital and Clinic, Bridgeport; Etamar A. Mower, Hartford; Harry Chaimson, Hartford; William Levy, Hartford; Samuel Lerner, Bridgeport; George E. Sutcliffe, the St. Louis photographer who admitted buying a Kansas City medical diploma; Dr. Ralph L. White, New Canaan, a member of the state board of eclectic medical examiners, who holds a Kansas City diploma; Michael J'Anthony, Torrington; Aurelius Raphael Dejanis, Bridgeport; Frank Beardsley, Bridgeport; James A. Christian, Fairfield; Anthony R. Campo, Bridgeport; Modestino Coppola, New Haven; Peter Koraitis, New Britain; Harry Braverman, Stamford; Joseph E. Koplowitz, Baltimore; Andrew Pleasant Bush, New Britain; Pasquale Romeo, Bridgeport, and Dr. James W. Bush, New Britain. Several of these men have now left the state; others cannot be found. The majority of these men, who showed diplomas from either the Kansas City College of Medicine and Surgery, Kansas City, or the St. Louis College of Physicians and Surgeons, failed at the examinations in July, 1921 and 1922, and passed with good marks at subsequent examinations.——Telegrams were sent by Dr. Hair to the twenty-eight men who had applied for examination at the November 13 examination at the Hotel Garde, New Haven, stating that no examination would be held on that date. Previously Dr. Hair had announced that no candidates from the Kansas City College of Medicine and Surgery or the St. Louis College of Physicians and Surgeons would be considered eligible for examination.——Governor Templeton sent for the deputy comptroller, November 13, to determine whether a $10,000 appropriation made by the 1923 session of the legislature to Columbus Hospital, Bridgeport, could be stopped on finding that Dr. Pasquale Romeo, who is alleged to have distributed many licenses granted by order of the state board of eclectic medical examiners, is president of the institution.——Hartford hospitals have issued notice to the effect that all graduates of the Kansas City College of Medicine and Surgery and of the St. Louis College of Physicians and Surgeons are barred from their institutions.——In an address to the Waterbury Medical Society, November 8, Governor Templeton urged the physicians of the state to take more interest in the affairs of Connecticut and declared that if they studied bills before the general assembly which affect their profession, a situation such as the one now being exposed could not exist.——Some of the physicians accused are threatening to sue the Hartford *Daily Courant* for mentioning their names in connection with the exposure.

FLORIDA

Hospital Celebrates Anniversary.—St. Luke's Hospital, Jacksonville, has just completed its annual drive in connection with the celebration of the fiftieth anniversary of the founding of the institution. Approximately $50,000 was raised, with which a children's ward will be erected.

Kiwanis Club Child Clinic.—The Jacksonville Kiwanis Club has raised $14,000 by subscription to establish a child clinic in that city. A representative of the National Committee for Mental Hygiene conducted a survey at the request of the club as to ways and means of operating a child clinic for the study of behavioristic abnormalities. Should the clinic not be assured, money on hand will be applied to some problem of child life in the city.

GEORGIA

Graduate Medical School Established.—It is announced that the formal opening of the Atlanta Graduate School of Physicians and Surgeons will take place, April 9, 1924. Dr. William Perrin Nicolson is dean; Dr. Garnett W. Quillian, vice dean, and Dr. Michael Hoke, president of the faculty. Through the generosity of Jacob Elsas a new outdoor clinic building is under construction at Grady Hospital.

Memorial to Physician.—Dr. F. Phinizy Calhoun, Atlanta, and members of his family have made a "founders' roll" subscription of $1,000 to the Stone Mountain Confederate Memorial in memory of the late Dr. Abner Wellborn Calhoun, who at the age of 15 enlisted as a private in the First Georgia Regiment. Dr. A. W. Calhoun was chairman of the Section on Ophthalmology of the American Medical Association, 1882-1883.

ILLINOIS

State Health Authorities at Zion.—Following complaints that there are more than twenty cases of diphtheria in Zion City, the state department of health started an investigation, November 7.

Dinner to Dr. Ridlon.—The colleagues and friends of Dr. John Ridlon, Chicago, will present him, on November 24, with a portrait of himself painted by Carl Bohnen. The ceremony will follow a banquet to Dr. Ridlon on that evening.

Physician Fined.—According to reports, Dr. Alfred Stocker, Rock Island, was fined $500 and costs in the federal district court at Peoria, November 6, when he pleaded guilty to the second count of an indictment charging him with violation of the Harrison Narcotic Law (THE JOURNAL, July 21, p. 220).

Hospital News.—Bids were taken November 1, for the construction of a $75,000 home for soldiers' widows at Maywood. ——Construction work on the $100,000 addition to St. Margaret's Hospital, Spring Valley, is nearing completion.—— Construction work will soon be started on a $70,000 addition to the Silver Cross Hospital, Joliet.

IOWA

Physician Fined.—It is reported that Dr. Frank H. Gaffey, Bradgate, was fined $200 when he pleaded guilty, November 10, at Rock Island, Ill., to driving his automobile while under the influence of liquor.

KENTUCKY

Results of Trachoma Campaign.—In 1912, at the request of the Kentucky State Board of Health, and under instructions from the Surgeon-General of the United States Public Health Service, an officer of that bureau proceeded to Kentucky to determine the prevalence of trachoma in that state. A survey was made in twenty-three counties, more than 18,000 persons were examined and over 1,200, between 7 and 8 per cent., were found to have trachoma. The type of trachoma found here was very severe and its mutilating effects were much in evidence. Numbers of people had been blinded by this disease. As an old resident said, "You coudn't throw a stone in any direction without hitting sore eyes." In 1913, in cooperation with the Kentucky State Board of Health, the Public Health Service established a hospital in the county seat of Knott County. An eye specialist was placed in charge, assisted by two trained nurses and other necessary aids. Thus the problem of eradicating trachoma was undertaken. This campaign against trachoma has been carried on in Kentucky down to the present time. A total of 740 trachoma patients, residents of Knott County, were treated at the U. S. Public Health Service Trachoma Hospital from 1913 to 1922, inclusive. The officer who went over the ground in 1912 recently made another survey of this region. He found that of those who had been found infected with trachoma in 1912, 63 per cent. were known to have been completely cured and only 35 per cent. still remained in doubt. Those cases were placed on the doubtful list which the county health officer was unable to determine from a personal examination as to whether a cure had or had not been effected. Heads of families who for years had been unable to earn a living and mothers unable to care for their children have been restored to usefulness. In brief, it can be said that one of the worst trachoma regions in this country has been practically cleared of the disease within a period of less than ten years.

LOUISIANA

Medical Society Organized.—Forty physicians of southern Louisiana met in New Iberia, October 28, to organize the Third District Medical Association. Dr. Lewis B. Crawford, Patterson, was elected president; Dr. Frank T. Gouaux, Lockport, vice president, and Dr. Harold G. F. Edwards, Lafayette, secretary-treasurer.

MAINE

Hospital News.—The Trull Hospital, Biddeford, closed its doors, November 1, after an existence of twenty-three years, following the death of Dr. J. F. Trull, the founder, some months ago.——A fire at the State Insane Hospital, Augusta, October 31, caused damages estimated at $20,000.

MARYLAND

Personal.—Dr. Arthur J. Davis, Baltimore, was elected a member of the executive committee of the Southern Medical Association and Dr. Howard E. Ashbury, secretary of the section on radiology, at the annual meeting in Washington, D. C., November 12-16.——Dr. Randolph Winslow, professor emeritus of surgery at the University of Maryland Medical School, has gone on a tour of the world.——Dr. Augustus B. Wadsworth, Albany, director, division of laboratories and research, New York State Department of Health, lectured at the School of Hygiene and Public Health, Johns Hopkins University, November 19, on "The Development of Public Health Laboratory Service in New York State."

Southern Physicians Visit Baltimore.—Members of the Southern Medical Association were guests of the physicians of Baltimore, November 16 and 17, after the close of the annual meeting in Washington, D. C. Clinics were arranged, November 16, at the University of Maryland Hospital, Mercy and Johns Hopkins Hospital and at the School of Hygiene and Public Health, Johns Hopkins University. On the 17th, a discussion of the prevention of cancer by the Maryland Cancer Committee of the American Society for the Control of Cancer was held. A dinner was given the members of the association by the Baltimore City Medical Society at Osler Hall, Medical and Chirurgical Faculty Building.

MASSACHUSETTS

Society News.—At a meeting of four western districts of the Massachusetts Medical Society in Springfield, October 26, Dr. William A. Pusey, Chicago, President-Elect of the American Medical Association, spoke on "Our Changing Knowledge of Eczema." Drs. James S. Stone, Boston, and Alfred Worcester, Waltham, ex-president of the state medical society, also gave addresses.

Gift Conditional to Progress.—In the will of the late William S. Richardson, who died, October 6, the sum of $75,000 is left to the Massachusetts Homeopathic Hospital, Boston, on condition it keeps pace with the general advancement of medicine and surgery for the next five years. If the hospital is not progressive the fund will go equally to Harvard University and the Sulgrave Institution, which institutions are to receive the remainder of the $210,000 estate.

Diploma Investigation.—Dr. Charles E. Prior, secretary of the Massachusetts Board of Registration and Licensure, is conducting an investigation to ascertain if "diploma mills" have any ramifications in that state, as some of the men who are to appear in the Connecticut grand jury investigation (alleged graduates of either the Kansas City College of Medicine and Surgery or the St. Louis College of Physicians and Surgeons) have claimed that part of their instruction was received at the Middlesex College of Medicine and Surgery, Cambridge, Mass.——Drs. Michael M. J'Anthony and Aurelius R. De Janis, practicing physicians of Connecticut, who are said to have applied for examination before the

Massachusetts Board of Registration in Medicine and paid their application fees of $25 each, failed to appear at Boston, November 13, to take their examinations. No reason was given for their absence. A certificate declaring that both men were graduated from the St. Louis College of Physicians and Surgeons in 1922 and signed by Waldo Briggs, dean, was received, November 13, by the state board. J'Anthony is said to be practicing in Torrington, Conn., and De Janis in Bridgeport, Conn. It is stated that a charge of perjury may be preferred against Dr. Frank J. Beardsley, of Bridgeport, owing to discrepancies made in his applications to the Connecticut and Massachusetts boards.

MICHIGAN

Chiropractor Sentenced.—According to reports, Paul Philip, a chiropractor of Mount Clemens, was sentenced recently to six months in jail for practicing medicine without a license.

MISSISSIPPI

Personal.—Dr. William H. Aikman has been appointed city health officer of Natchez, to succeed Dr. Eugene B. French, Jr., who resigned last April.——Dr. Charles M. Roberts, Ancon, Canal Zone, has been installed as county health officer of Lee County, to succeed Dr. James B. Black, Jr., Tupelo, who resigned recently.——Dr. W. A. Barnes has been appointed surgeon in charge of the Natchez Hospital to fill the unexpired term of Dr. Augustine J. Podesta, who resigned to enter private practice at Vicksburg. Dr. Edwin Benoist has been appointed house surgeon to succeed Dr. Barnes.

MISSOURI

Personal.—Dr. Stephen H. Ragan, Kansas City, has been appointed surgeon-general of the U. S. Confederate Veterans. Dr. Ragan, who is a major in the medical officers' reserve corps of the U. S. Army, has been in charge of medical aid in every reunion, except two, of the Confederate veterans in the last fifteen years.——Edgar Allen, Ph.D., Washington University, St. Louis, has been appointed professor of anatomy at the University of Missouri School of Medicine, Columbia.——Dr. Eugene M. Lucke, Gray Summit, has been appointed health commissioner of Franklin County.

Hospital News.—The Christian Hospital property in North St. Louis has been sold and will be reconstructed into an office building. New property has been purchased at Carter and Newstead avenues on which the Christian Hospital Association will erect a new building which will cost approximately $350,000 and will have a capacity of 140 beds.——A seventy-five bed hospital will be erected for the Ellen A. Burge Deaconess Hospital, Springfield. The present institution will be used for a nurses' training school.

MONTANA

Hospital Dedicated.—Bishop Lenihan, Great Falls, dedicated the new St. Vincent Hospital, Billings, November 7. The institution was erected at a cost of $750,000 and has a capacity of 150 beds.

State Hospital News.—The Montana State Hospital, Warm Springs, has 1,430 patients. A new wing is being constructed. For the first time the natural warm water from the springs is being used for the treatment of patients.——The state tuberculosis sanatorium, Deer Lodge, has 110 patients.

Get-Together Meeting.—The Western Montana Medical Association at a meeting held recently, decided to hold a banquet and clinical program in Missoula this month for physicians from the surrounding country. A committee on arrangements was appointed with Dr. Frank D. Pease, city and county health officer, chairman.

NEW YORK

Typhoid Carrier Caused Epidemic.—The source of nineteen cases of typhoid fever, which occurred recently in Jamestown, has been traced to a "carrier" on a dairy farm, according to the state health department.

Free Insulin Clinic.—The Harbor Hospital, Brooklyn, has opened a free insulin clinic for the poor under the direction of Dr. Max J. Fein, chief of the metabolic service of Broad Street Hospital, New York City, and the executive committee of the hospital has donated beds for diabetic patients who require hospital treatment.

Examination of Children.—Investigation of the health status of children will be conducted by the New York State Department of Health, division of maternity, infancy and child hygiene at various towns in Nassau County, from November 19-28. All well children from 6 months to 6 years of age not attending school are to be examined without charge.

Bogus Physicians Sought.—The board of health and the New York County Medical Society are on the lookout for more than 100 fake "physicians" who are said to have taken refuge in New York as a result of the investigation in Connecticut regarding the authenticity of their medical diplomas. It is alleged that several are practicing in hospitals in the city.

Medical Center in Queens.—A new medical center is proposed for Queens by the Medical Society of the County of Queens, on the site recently purchased in Forest Hills with money raised by members of the society. The plans provide for one large auditorium and several meeting rooms for the different sections; office accommodation for the allied professions, physicians, dentists, druggists, with a nurses' registry, club room and a medical library.

New York City

Harvey Society Lecture.—Dr. Walter W. Jacobs of the Rockefeller Institute for Medical Research will deliver the third Harvey Society lecture at the New York Academy of Medicine, December 8. His subject will be "Chemotherapy of Protozoan and Bacterial Infections."

Malignant Disease Clinic.—A new clinic for the treatment of malignant diseases of the urinary tract, was opened, November 14, at the New York Hospital by the James Buchanan Brady Foundation. Dr. Oswald Swinney Lowsley, director of the Brady Foundation, and twenty other physicians will be on the staff.

New York Post-Graduate Medical School and Hospital Lectures.—This course of free lectures at 5 o'clock Friday afternoons to which all physicians are cordially invited, will include the following: November 30, "Epidemic Encephalitis," by Dr. Frederick Tilney; December 7, "The Importance of Early Diagnosis in Diseases of the Genito-Urinary Tract," by Dr. Joseph F. McCarthy; December 14, "Radium Therapy" (with moving pictures), by Dr. George Stewart Willis.

Personal.—Dr. Frank J. Monaghan, commissioner of health, has been appointed by acting mayor Murray Hulbert, to represent the citizens of New York on the Fair Coal Price Commission which is being organized in accordance with a proclamation issued by Governor Smith, October 23.——Dr. Harry P. Swift, who has been engaged in public health work with the department of health for fourteen years, has been appointed special deputy commissioner of health to serve without compensation and to perform such duties as may be assigned to him.

Society Celebrates Fiftieth Anniversary.—The New York Laryngological Society, now the Section of Laryngology of the New York Academy of Medicine, which has the distinction of being the oldest laryngological society, celebrated its fiftieth anniversary at the New York Academy of Medicine, November 15. Dr. Arthur B. Duel, a vice president of the academy, presided, and Drs. Henry Hall Forbes and D. Bryson Delavan, gave addresses. Another feature of the meeting was the presentation of a portrait of Professor Ludwig Türck of Vienna, the gift of Mrs. George Morewood Lefferts to the academy. Dr. Thomas J. Harris made the presentation. In connection with this celebration there is an exhibition which will continue two weeks at the Academy of Medicine, consisting of instruments, illustrations, portraits and publications, representing original discoveries, inventions and other contributions to the progress of laryngology made in New York.

OHIO

Chiropractors to Jail.—Three chiropractors of Bellefontaine were convicted of practicing medicine without a license by Judge Pettit, November 1, and were sent to jail for forty-one days on failure to pay fines of $25 each.

Orthopedic Clinics.—A new series of orthopedic clinics will be held under the joint auspices of the medical profession, the state department of welfare, the state department of health, and the Ohio Society for Crippled Children. The academies of medicine in various cities are forming committees to support the work.

Psychiatric Foundation of the Western Reserve.—A group of northern Ohio residents have organized to establish a model health community and nerve rehabilitation center near Cleveland, it was announced, November 5. The charter, which has

been taken out under the name of the Psychiatric Foundation of the Western Reserve, will be on the order of the MacLean Institute, Boston, the Friends Hospital, Philadelphia, and the Sheppard and Pratt Hospital, near Baltimore. It is designed as a rest colony and research center. Laboratory equipment will be installed for the investigation of all phases of practical psychology, and the cause and treatment of nervous and mental ailments. The staff will comprise an experienced psychiatrist and a corps of physicians, nurses and aids. The institution will be heavily endowed and will be operated on a cost basis.

Philadelphia

Personal.—Dr. Frederick Hurst Maier has been appointed a visiting chief of the gynecologic department of the Philadelphia Hospital.——Dr. Laura H. Carnell, dean of Temple University, was the guest of honor at the fifteenth annual luncheon of the Temple University Association, held at the Bellevue Stratford, November 10.——Dr. Arthur P. Keegan, who was for more than ten years surgeon of St. Agnes Hospital, has been appointed chief surgeon of St. Mary's Hospital.

Hospital News.—Formal opening of the new administration and tuberculosis buildings of the Philadelphia Hospital for Mental Diseases took place at Byberry, November 9, with Hampton Moore, mayor of the city, the principal speaker. The new building has been named in honor of the late director of the department of public health, Dr. C. Lincoln Furbush, who planned the structure but died before its completion. ——The semiannual luncheon of the managers and staffs of the Women's Hospital, Philadelphia, October 19, marked the opening of the remodeled clinic.

TENNESSEE

Hospital News.—The Junior League Hospital for Crippled Children was opened in Nashville, October 8. The present building is a remodeled residence donated by the Standard Oil Company rent free. An outpatient department has been established, and the social service work of the hospital will be conducted by members of the league.——A new hospital will be erected at Jackson in the near future at a cost of $125,000 it was announced, October 15, at a dinner given by Dr. Jere L. Crook, originator of the plan. The staff of the new institution has been announced as follows: Drs. Charles F. Webb, George L. Williamson, Rufus S. Brown, John T. Herron, Stanford M. Herron, C. P. Waller, Benjamin C. Arnold, S. Dickson and C. W. Davis.——The Wallace-Somerville Sanitarium, Cherry Station, Memphis, is erecting a $30,000 addition.——The general Education Board, New York City, appropriated more than $80,000 to erect an addition to the George W. Hubbard Hospital of Meharry Medical College, Nashville, and thus increased its capacity to 150 beds. The hospital will be opened for public inspection, Thanksgiving Day, November 29.

UTAH

Public Health Laboratory.—In conjunction with the biologic department of Brigham Young University, a county public health laboratory will be maintained in Utah County so that physicians who send bacteriologic material to the laboratory may receive the reports twenty-four hours later free of charge.

WISCONSIN

Chiropractors Cannot Make Eugenic Examinations.—In an opinion handed down by Attorney General Eckern, November 1 he declared that chiropractors are not permitted to make eugenic examinations as they are not included under the title of physicians.

State Liquor License Required.—The state prohibition commissioner has notified Wisconsin physicians that a state license to prescribe liquor is required in addition to the federal permit. But he called attention to the fact that no permits are required after Jan. 1, 1924, for the use of alcohol for sterilizing purposes only. The $10 fee for this use was repealed by the 1923 legislature, effective next year.

Medical Testimony Not Essential.—Judge Stevens of Dane County recently decided that the state industrial commission need not be bound by medical testimony in determining the extent of injuries when they in person see the injured man. In the case in question, medical testimony fixed the disability at less than 50 per cent. The commission saw the injured man and raised the percentage of disability to 50 per cent. which was sustained by the circuit court.

CANAL ZONE

The Gorgas Memorial.—The honorary presidency of the Gorgas Memorial Institute of Tropical and Preventive Medicine has been accepted by President Coolidge, in a letter which was read before a meeting of the board of directors of the organization at the Pan-American Union Building, Washington, D. C., November 13. The President's letter said in part:

"The organization stands for a world movement to bring the lands and climates of the tropical world into their fullest productivity and service to humanity. This is certain to be one of the great problems of the coming generations, increasingly insistent as the population of the temperate zones shall increase. One of the great accomplishments of the last half century has been the development of sanitary and medical procedures by which the tropics have been made available for the habitation of peoples acclimated to the temperate areas. General Gorgas will always be remembered as foremost among those who have labored intelligently and effectively in this cause, and I am glad to be associated with an organization which proposes to project that great service into the future."

The Gorgas Memorial Institute which will be established at Panama City will have an endowment fund of $5,000,000 raised by popular subscription. The directors will start a drive to raise this fund, Jan. 1, 1924.

PHILIPPINE ISLANDS

Public Health News.—Under the auspices of the Rockefeller Foundation the Philippine Islands Department of Health will inaugurate a campaign to rid the islands of mosquitoes.——According to the annual report of the director of health the birth rate during 1922 increased, and the death rate was lowered. This is attributed to generally improved sanitary conditions.

CANADA

University News.—The University of Toronto is making arrangements for a banquet in honor of Drs. Banting, Best and Macleod, at Hart House, Toronto, November 26, for which about 325 invitations will be issued.——Dr. Samuel Johnston, Toronto, has been appointed lecturer in anesthesia in the University of Toronto.

Banting Research Foundation.—It was announced from London, Ont., October 31, that it is proposed to establish a $1,000,000 Banting Medical Research Foundation. Dr. Frederick G. Banting was the first contributor to the fund, donating $10,000, a portion of his share of the Nobel Prize. The committee to take preliminary charge of the foundation includes Dr. George David Stewart, president of the New York Academy of Medicine, New York; Dr. John Gerald Fitzgerald of the University of Toronto, and Dr. George W. Ross, Toronto.

Free Insulin.—Insulin for free distribution is provided by the provincial board of health of Ontario. Returns received from seven of the fifteen distribution centers indicate a large increase in the number of units of insulin for distribution as follows:

	October	September
Windsor	8,300	4,000
Peterboro'	2,900	1,600
Owen Sound	4,600	3,550
Fort William	850	400
Kingston	9,810	7,300
London	11,200	10,800
Toronto (approximately)	60,000	42,950

Sanipractic Board Bill.—The chiropractors of British Columbia are renewing their appeal to the legislature to give them a legal status independent of the legitimate medical profession. Their case is supposed to be strengthened by association with them of the entire so-called sanipractic profession, a name given to a group including not only chiropractors but also masseurs, dietitians, physical culture experts and others. R. H. Neelands, legislator from South Vancouver, introduced this bill, "The Sanipractic Physicians Act," asking that the sanipractic group be given its own board of examiners, but permitting one member of the medical profession to be on that board.

GENERAL

Investigation of Respiratory Diseases.—The U. S. Public Health Service is undertaking a study of common colds, respiratory diseases and influenza. Certain colleges have been selected and cooperation obtained for this study—Harvard, Johns Hopkins, Georgetown, Howard, Tulane, Ohio State, the University of Chicago and the University of California. It is anticipated this work will extend over a period of two or three years.

Roentgenology Journal to be Enlarged.—The *American Journal of Roentgenology and Radium Therapy*, official organ of the American Roentgen-Ray Society and the American Radium Society will appear in enlarged form in 1924, with more illustrations, abstracts and original articles. Dr. Arthur C. Christie will be the editor succeeding Dr. H. M. Imboden, and Drs. James T. Case, Henry K. Pancoast and William Duane, Ph.D., will be the associate editors. The yearly subscription will be $10.

Nobel Prizes.—The Swedish Academy of Science has awarded the 1923 Nobel prize for physics to Prof. Robert A. Millikan, director of the Norman Bridge Laboratory, Pasadena, Calif., for research concerning electrical unit charges, photoelectrical effects, and isolation of electrons. Professor Millikan was professor of physics at the University of Chicago from 1910 to 1921. The 1923 prize for chemistry has been awarded to Prof. Friedrich Pregl, professor of chemistry, University of Graz, Austria, for work on micro-analysis.

Ohio Valley Medical Association.—At the annual convention of the association in Evansville, Ind., November 6-7, Dr. Leon L. Solomon, Louisville, Ky., was elected president to succeed Dr. Sidney J. Eichel, Evansville; Drs. Murray N. Hadley, Indianapolis, William C. Herman, Cincinnati, and James Y. Welborn, Evansville, vice presidents, and Dr. Benjamin L. W. Floyd, Evansville, was reelected secretary-treasurer. The 1924 convention will again be held in Evansville, and will continue for four days instead of two. The entire area of every state bordering on the Ohio River will henceforth be included in the association.

Mentally Deficient Immigrants.—The medical examiner for the New York State Hospital Commission announces that in the last fiscal year, 4,724 mentally defective aliens have been admitted to the United States under bond and 2,712 without bond, despite the fact that all were mandatorily excluded by medical examiners. This announcement was made October 27, at a conference in New York of insanity experts from various states who proposed the permanent organization of state bodies dealing with insanity in an effort to force the government to assume full responsibility for the situation and bring about corrective measures. New York, Connecticut, New Jersey, Massachusetts, Illinois, Pennsylvania, Rhode Island and the District of Columbia were represented.

Hospital May Refuse Admission to Patients of Cultists.—The question of whether or not the superintendent of the Siskiyou County General Hospital, Yreka, Calif., has the right to deny admission to patients entered at the hospital by chiropractors came to a focus at a meeting of the county board, October 1, when Alfred Burklund appeared before the supervisors with legal counsel and demanded equal privileges with physicians. At the conclusion of a lengthy hearing the board adopted the following resolution:

Resolved, That the board of supervisors vest full discretionary powers in the superintendent of the county hospital in the admission of patients to the county hospital, excepting as provided by law. All patients at such hospital to be under the care or charge of a legally qualified medical practitioner.

Milbank Memorial Fund.—At the recent annual meeting of the American Public Health Association, John A. Kingsbury, secretary of the Milbank Memorial Fund announced that $2,000,000 would be appropriated by that foundation for health demonstrations (THE JOURNAL, September 22, p. 1030) to determine which diseases yield more readily to concerted attack; to what extent tuberculosis can be further reduced; whether the infant mortality rate can be lowered; whether diphtheria can be practically eliminated; what preventive methods are most effective in controlling disease, and what constructive measures are most successful in promoting public health. A record will be kept of the cost of each project. Actual work has already started in Cattaraugus County, a typical rural district in the western part of New York State with a population of about 72,000, and in the city of Syracuse with a population of about 175,000. It is estimated that at the end of the five-year period the demonstrations program will be firmly enough established in each community to command complete local support and to serve as an example in disease prevention and health promotion. The origin and purpose of this fund was given in THE JOURNAL, Sept. 30, 1922, p. 1154.

Bequests and Donations.—The following bequests and donations have recently been announced:

Hershey Industrial School and Orphanage, Harrisburg, Pa., $60,000,000, by Milton S. Hershey, the chocolate manufacturer.

To found the Washington and Jane Smith Home for Aged People in Chicago, in memory of her parents, $1,000,000, by the will of Miss Emilie J. Smith.

Murphy Memorial Hospital, Whittier, Calif., an additional $150,000 for extension work by Col. Simon J. Murphy.

Van Wert (Ohio) County Hospital, Van Wert, $110,000, by the will of William Jones.

Everett, Wash., for the erection of a hospital, $100,000; $50,000 each, from A. H. B. Jordan and William C. Butler.

St. Francis Xavier Infirmary, Charleston, S. C., $55,625, in a drive for funds.

Bryn Mawr Hospital, Philadelphia, $50,000, the proceeds of the Devon horse show and country fair.

Beth Israel Hospital, New York City, $50,000, donated for the completion of the new building.

Druid City Hospital, Tuscaloosa, Ala., $10,000 for the erection of a nurses' home, from J. T. Horne.

The New Protestant Hospital, Anderson, Ind., $10,000 from the local chapter of the Ku Klux Klan.

Culver Union Hospital, Crawfordsville, Ind., $6,500 by the will of Miss Clara Crawford.

Rockford, Ill., for the establishment of hospital beds, $1,500, by James H. Lake.

Victory Memorial Hospital, Waukegan, Ill., $1,000, by the will of Mrs. Grace Edmonds.

St. Luke's Hospital, Jacksonville, Fla., $1,000, by the Putnam Lumber Company.

Southern Medical Association.—At the final session of the Southern Medical Association held at Washington, D. C., November 15, Dr. Charles L. Minor, Asheville, N. C., former president of the National Tuberculosis Association, was elected president. Other officers elected were: Dr. Robert C. Lynch, New Orleans, vice president; Dr. Thomas A. Groover, Washington, D. C., second vice president; C. P. Loranz, Birmingham, Ala., secretary-manager, and Dr. Marye Y. Dabney, Birmingham, editor of the association's journal. Next year's convention will be held in New Orleans. On the last day of the session, Mrs. Coolidge received the ladies and the President received the entire group attending the convention. The members had previously adopted a resolution declaring they would have the President forego the strain of handshaking. In a brief address, President Coolidge commended the medical profession for safeguarding the health of the nation, declaring that, public health lies at the foundation of all public welfare. "Unless the public health," he said, "is properly conserved and protected, there is very little use for any activity looking toward the promotion of public welfare." The President's address was in the form of a welcome. He spoke of his high regard for the medical profession. He said, because of the high type of men, their advice has been eagerly sought, and has helped to make better citizens.

LATIN AMERICA

Public Health in Brazil.—A campaign is being conducted in the state of Amazonas, Brazil, against hookworm, malaria and smallpox by the state health department. Leprosy is reported as increasing rapidly. In the city of Manaos 440 cases have been reported.

Mental Hygiene in Argentina.—A league for mental hygiene is being planned in Argentina, similar to those in the United States and France. The editorial staff of the *Semana Médica* appointed in 1921 Prof. Victor Delfino as its representative to confer with the Argentine Neurologic Society and others in regard to the organization of a league of the kind in Argentina. The movement has received new impetus from the return of Dr. Helvio Fernández, who has been studying the subject in other countries. He is director of the institute of criminology connected with the national penitentiary.

Joint Meeting of Pediatric Societies.—In 1921 the Pediatric Society of Uruguay visited Buenos Aires to hold joint meetings with the Argentine society. This year the Argentine society visited Montevideo, and two joint meetings were held, besides visits to local medical institutions and excursions. There were seven members in the party from Argentina, besides the president, Dr. Mamerto Acuña. A banquet was tendered by Dr. Morquio. The sessions were presided over by Drs. Acuña, Navarro, Aráoz Alfaro and Cibils Aguirre of the visiting society. Navarro's suggestion was adopted that in future joint meetings of the kind, two special topics shall be appointed for discussion.

Personal.—Dr. Martin Ficker, professor of hygiene at Berlin, has gone to S. Paulo, Brazil, to take charge of the bacteriologic laboratory at the German Hospital in that city. ——The prize awarded by the Buenos Aires medical faculty for the best work published in Argentina during the years 1919-1920, was given to Dr. Guillermo Bosch Arana for his "Cineplastic Amputations." Another prize was awarded to Dr. P. I. Elizalde for his work "Syphilis of the Lungs." The Azara prize for the best work on the flora and fauna of Argentina was awarded to Dr. A. Bianchi Lischetti for his studies of Argentine mosquitoes.——On the return of Dr. E. V. Segura, professor of otolaryngology at Buenos Aires,

from Europe as delegate from the medical faculty at the Pasteur centennial and congresses, he was tendered a banquet with addresses by Drs. José Arce, Zambrini and Ayarragaray, concluding with remarks by Dr. Demarest of the Paris medical school, now visiting in Argentina.——The S. Paulo Medical Society has elected Drs. Acuña and A. Olivera of Buenos Aires corresponding members.

FOREIGN

Anniversary of Free Treatment of Venereal Disease.—October 20 was the one hundred and fiftieth anniversary of the first decree in Denmark providing gratuitous treatment for persons with venereal disease.

The Legion of Honor.—In connection with the celebration of the centenary of the birth of Pasteur, the French government made awards in "La Légion d'Honneur" of two "grands officiers," nine "commandeurs," twenty-eight "officiers," and fifty-two "chevaliers."

Public Health News.—Plague has been reported in British East Africa. Seventeen cases with eight deaths occurred in Mombasa. In Uganda 172 cases were reported in one month with 164 deaths.——Epidemic smallpox is reported from Bangkok, Siam, where during the last five months 329 cases have been reported with 184 deaths. Vaccination is compulsory, but enforcement of the law is difficult in certain areas. All persons entering the port of Bangkok are required to be vaccinated before leaving the ship.——Under date of September 21, epidemic cerebrospinal meningitis was reported prevalent in the Witwatersrand area of South Africa, with twenty-nine cases occurring in the white population and 185 cases in the colored population. The infection was stated to be widely disseminated.——In two weeks 12,700 cases of malaria were reported recently from the Bashkir country of the Ural region of Russia and more than 70,000 cases were reported during the first six months of 1923 from the Donetz River region.

Labor and Health in Japan.—It is planned to establish a compulsory labor insurance system for injured or sick workers in Japan who are receiving 1,200 yen or less per year. They will receive 60 per cent. of their wages while disabled, and be given free medical attention; in case of death, funeral expenses will be paid.——Every three years Japan will take a labor census. Factories employing thirty or more workers will be required to report to the government the name and location of factories, kind of business, number of employees, working hours, holidays and rest periods. This will help the government to enforce the recently amended factory law.——In the cotton mills of Japan, four fifths of the workers are women and girls, of whom nearly two thirds are under 20 years of age. Among 177,476 working women and girls, seventy-nine were less than 12 years of age; 32,722 were between 12 and 15 years; 79,656 between 15 and 20 years, and 65,016 over 20 years. The new law requires that children under 16 years of age, and women, will not be employed more than eleven hours a day.

Economy Halts Medical Research in India.—The committee on retrenchment in India recently recommended, among other things, that the payment of research officers from central revenue should be discontinued. The Research Fund Association has nearly $1,000,000 (33 lakhs) in hand derived from government contributions. The retrenchment committee advised that the interest on this money be used to maintain medical research. The drastic proposals put forward by the committee would have meant virtually closing down all research work in India; but instead of abolishing the appointments of the twelve bacteriologists, it is proposed to retain six of them and leave six places unfilled until the financial conditions are more favorable. The establishment of the central research institute at Delhi and the grant of about $161,000 yearly to the Indian Research Fund Association are similarly suspended. The directorship of medical research has also been abolished for the time being, but that officer's duties will be carried on departmentally.

CORRECTION

Cleveland Academy of Medicine.—THE JOURNAL, November 3, p. 1532, stated that Drs. J. B. Morgan and H. Van. Y. Caldwell were elected president and secretary, respectively, of the Cleveland Academy of Medicine. It should have read: "At a recent meeting of members of the Academy of Medicine of Cleveland, a golf association was formed, electing Dr. J. B. Morgan president and Dr. H. Van. Y. Caldwell, secretary."

Government Services

The Medical Officers' Reserve Corps

The status of the Medical Section of the Officers' Reserve Corps as of Nov. 10, 1923, shows the relative inadequacy of the present organization to meet the requirements of a major emergency. There are, at present, enrolled in the Medical Section 6,700 officers, as follows: brigadier generals, 17; colonels, 134; lieutenant colonels, 499; majors, 2,185; captains, 2,863; first lieutenants, 981. During the World War, approximately 37,500 medical officers served with the United States Army.

The War Department plan for six field armies calls for approximately 45,000 medical department officers. It is apparent that the progress made since the armistice in the reorganization of the Medical Reserve Corps does not satisfy the country's need. The War Department seeks the support of former officers of the Reserve Corps in the accomplishment of a well organized medical section. Perpetuation of a properly organized medical reserve demands that all graduates in medicine identify themselves with it by seeking appointment therein as soon after graduation as they become eligible.

Support of the medical program for national defense is the medical profession's obligation. This obligation will not be evaded in time of emergency, but it is wise to organize the profession in time of peace. The Surgeon General considers the development of the Reserve Corps his outstanding obligation in the interest both of the profession and of the military service, and desires to enlist the support of all physicians in the promotion of the medical program of the national defense policy.

MEDICAL DEPARTMENT RESERVE UNITS

In addition to completing the enrolment of officers, the present preparedness measures aim to assign these officers to war time positions while there is ample opportunity to determine their relative qualifications and adaptations. Three fourths of the medical officers who serve in war must be assigned to branch assignment units, and the Surgeon General is now engaged in organizing these units. In the organization of reserve hospitals, which constitutes a large part of the branch assignment project, the initiative is being placed in the hands of civil hospitals and medical schools. All general, evacuation and surgical hospitals are to be organized in this way. Each reputable institution of sufficient size is asked to adopt a unit, which will be representative of the institution's staff and will bear the institution's name. These units are simply groups of officers deliberately and intelligently placed and available to step out as the staffs of military hospitals in case of war.

The following is a list of medical department units already authorized and under organization with the name of the commanding officer when there has been one assigned:

General Hospital No. 1, Bellevue Hospital, New York.
General Hospital No. 4, Western Reserve University, Lakeside Hospital, Cleveland.
General Hospital No. 6, Massachusetts General Hospital, Boston; Lt.-Col. James Howard Means.
General Hospital No. 8, New York Post-Graduate Medical School and Hospital, New York; Lt.-Col. John Joseph Moorhead.
General Hospital No. 10, Pennsylvania Hospital, Philadelphia; Col. Charles Franklin Mitchell.
General Hospital No. 21, Washington University Medical School, St. Louis; Lt.-Col. Malvern Bryan Clopton.
General Hospital No. 25, University of Cincinnati College of Medicine and Cincinnati General Hospital, Cincinnati; Lt.-Col. Arthur Charles Bachmeyer.
General Hospital No. 26, University of Minnesota and University Hospital, Minneapolis.
General Hospital No. 27, University of Pittsburgh School of Medicine, Pittsburgh, Lt.-Col. James Delavan Heard.
General Hospital No. 28, Christian Church Hospital, Kansas City, Mo.
General Hospital No. 32, Indiana University School of Medicine, Indianapolis.
General Hospital No. 38, Jefferson Medical College, Philadelphia; Lt.-Col. Henry Keller Mohler.
General Hospital No. 43, Emory University, Emory University, Ga.; Lt.-Col. Frank K. Boland.
General Hospital No. 46, University of Oregon Medical School, Portland, Ore., Major Richard B. Dillehunt.
General Hospital No. 48, Metropolitan Hospital, Dept. of Public Welfare, Welfare Island, New York.
General Hospital No. 50, University of Washington, Seattle, Lt.-Col. James Beaty Eagleson.
General Hospital No. 51, Georgetown University School of Medicine, Washington, D. C.
General Hospital No. 52, Syracuse University School of Medicine, Syracuse, N. Y.; Lt.-Col. Edward Seguin Van Duyn.
General Hospital No. 53, St. Louis University School of Medicine, St. Louis; Col. Hanau Wolf Loeb.

General Hospital No. 54, State University of Iowa College of Medicine, Iowa City; Lt.-Col. Lee Wallace Dean.
General Hospital No. 55, Creighton University College of Medicine, Omaha; Lt.-Col. Hermann Von Wechlinger Schulte.
General Hospital No. 56, University of Oklahoma School of Medicine, Oklahoma City, Lt.-Col. LeRoy Long.
General Hospital No. 57, Western Reserve University, Cleveland City Hospital, Cleveland.
General Hospital No. 60, Iowa Methodist Hospital, Des Moines, Iowa; Major Charles Francis Smith.
General Hospital No. 61, Latter-Day Saints Hospital, Salt Lake City.
General Hospital No. 62, St. Luke's Hospital, Jacksonville, Fla.; Lt.-Col. Stanley Erwin.
General Hospital No. 70, City Hospital, Worcester, Mass.; Lt.-Col. Frank W. George.
General Hospital No. 73, Franklin Square Hospital, Baltimore.
General Hospital No. 75, George Washington University Hospital, Washington, D. C.
Evacuation Hospital No. 1, Johns Hopkins Hospital, Baltimore.
Evacuation Hospital No. 2, St. Luke's Hospital, New York.
Evacuation Hospital No. 4, Washington University School of Medicine, St. Louis.
Evacuation Hospital No. 18, Methodist Episcopal Hospital, Indianapolis; Col. Carleton Buel McCulloch.
Evacution Hospital No. 19, Davis-Fischer Sanatorium, Atlanta, Ga.
Evacuation Hospital No. 20, Flower Hospital, New York; Lt.-Col. Frederick M. Dearborn.
Evacuation Hospital No. 21, St. Anthony's Hospital, Terre Haute, Ind.
Evacuation Hospital No. 22, Milwaukee Surgical Society, Milwaukee.
Evacuation Hospital No. 24, St. Vincent's Infirmary, Little Rock, Ark.; Col. Francis Vinsonhaler.
Evacuation Hospital No. 25, West Suburban Hospital, Oak Park, Ill.
Evacuation Hospital No. 63, St. Margaret's Hospital, Kansas City, Kan.
Surgical Hospital No. 4, Washington University Medical School, St. Louis.
Surgical Hospital No. 5, Western Reserve University, St. Vincent's Charity Hospital, Cleveland.
Surgical Hospital No. 6, Peter Bent Brigham Hospital, Boston; Major Elliott Carr Cutler.
Surgical Hospital No. 7, Hahnemann Hospital, Scranton, Pa.
Surgical Hospital No. 15, Italian Benevolent Institute and Hospital, New York.
Surgical Hospital No. 16, Southern Pacific Hospital, Houston, Texas.
Hospital Train No. 3, Pennsylvania State; Major Matthew Joseph Shields.
Hospital Train No. 4, Alabama State; Capt. William Ernest Warren.
Hospital Train No. 7, Oklahoma State; Capt. Fred. Fenton Jones.
Hospital Train No. 8, New York State; Capt. Joseph Parsons Comegys.
Hospital Train No. 9, Virginia State; Capt. Veolo Oglesby Caruthers.
Hospital Train No. 10, Illinois State; Capt. John Letherman Tombaugh.
Hospital Train No. 11, Pennsylvania State; Capt. William Herbert Kelsea.
Hospital Train No. 17, New York State; Major William Nicholas Maloney.
Hospital Train No. 18, Massachusetts State; Capt. William Bradford Blanchard.
Hospital Train No. 26, New York State; Capt. Robert Spencer Familton.
Hospital Train No. 40, New Jersey State; Major Edward Porter Essertier.
Hospital Train No. 44, California State; Major Daniel Henry Keller.
Hospital Train No. 46, Illinois State; Capt. Francis Theodore Rollins.
Hospital Train No. 48, Oklahoma State; Capt. Richard Franklin King.
Hospital Train No. 54, Kentucky State; Major William Darwin McFaul.
Hospital Train No. 56, Georgia State; Capt. Albert Ferguson Brawner.
Hospital Train No. 60, Missouri State; Major Morgan Leland Clint.
Hospital Train No. 63, Arkansas State; Major Sherod Arnold Drennen.
Hospital Train No. 66, Arkansas State; Major William Granville Baird.
Hospital Train No. 67, Illinois State; Major Leon George Brackett.
Hospital Train No. 68, Indiana State; Capt. Irving Henry Willett.
Hospital Train No. 70, Pennsylvania State; Major John Walter Goodsell.
Station Hospital No. 1, Connecticut State; Lt.-Col. Louis Irving Mason.
Station Hospital No. 2, Cook County, Illinois; Lt.-Col. James Alexander Harvy.
Station Hospital No. 4, Indiana State; Major Flavius Jasper Beck.
Station Hospital No. 5, Minnesota State; Major Frederick Edwin Kraft.
Station Hospital No. 6, Michigan State; Lt.-Col. Henry George Berry.
Station Hospital No. 7, Pennsylvania State; Major Clarence Hogue Ingram.
First Army Medical Headquarters, Second Corps Area.
Hospital Center Headquarters "A," New York City.
Convalescent Camp No. 1, Maryland State.
Convalescent Camp No. 2, Virginia State; Major Adam T. Finch.
Hospital Center Laboratory "B," Pennsylvania State; Lt.-Col. Allen John Smith.
General Medical Laboratory No. 1, Slee Laboratories, Swiftwater, Pa.; Col. Richard Slee.
Army Medical Laboratory No. 5, New York State; Lt.-Col. David Marine.
Army Medical Laboratory No. 6, Sixth Corps Area; Major Walter Gelvin Bain.
Aviation Medical Laboratory No. 2, California State; Major Charles Gaskill Stivers.
Aviation Medical Laboratory No. 4, Texas State; Major Albert Fitzhugh Beverly.
Aviation Medical Laboratory No. 5, California State; Major Peter de Obarrio.
Aviation Medical Laboratory No. 6, New Jersey State; Capt. Louis Raymond Burnett.
Aviation Medical Laboratory No. 7, Tennessee State; Major George Edward Campbell.
Aviation Medical Laboratory No. 8, Indiana State; Capt. William Louis Culpepper.
Aviation Medical Laboratory No. 10, Iowa State; Major Murdoch Bannister.
Aviation Medical Laboratory No. 12, Virginia State; Major Joseph Nicholson Barney.
Aviation Medical Laboratory No. 14, Tennessee State; Major Louis Levy.
Aviation Medical Laboratory No. 15, Pennsylvania State; Major Ephraim Ezra Campbell.
Aviation Medical Laboratory No. 16, Pennsylvania State; Major Carl Williams.
Medical Supply Depot (C. Z.) No. 1, New York State; Lt.-Col. Harrie Sheridan Baketel.
Medical Supply Depot (C. Z.) No. 2, Fourth Corps Area.
Medical Supply Depot (C. Z.) No. 3, Illinois State; Lt.-Col. John William Hobbs Pollard.
Medical Supply Depot (C. Z.) No. 4, New York State.
Medical Supply Depot (C. Z.) No. 5, Iowa State.
Army Medical Supply Depot No. 16, Fourth Corps Area.
Army Medical Supply Depot No. 17, Eighth Corps Area.
Army Medical Supply Depot No. 18, Eighth Corps Area.

The foregoing represents a small part of the end to be accomplished. For example, the mobilization plan, based on an army of two million men, calls for seventy-two surgical hospitals, ninety evacuation hospitals and 300 general hospitals. The Surgeon General must have the full cooperation of the country's medical institutions in accomplishing this objective, which is imperative if a reasonable position of readiness is to be attained. The profession will fully appreciate that the manifest embarrassment of preparation in time of strained relations, the likelihood of being thrown entirely on our own resources at the outset, and the appalling measures of gas attack being evolved by military nations, demand full peace time preparations for a national emergency.

Foreign Letters

PARIS

(From Our Regular Correspondent)

Nov. 2, 1923.

Imposition of Fine for Error in Diagnosis

In previous letters (THE JOURNAL, Dec. 16, 1922, p. 2099, and June 2, 1923, p. 1628) I referred to a decision of the court of appeals of Rouen, imposing a penalty on Dr. Vallet of Vernon for an error in diagnosis, as the result of which he operated on a woman for fibroma when in reality she was pregnant. The fact that Vallet had not made a roentgen-ray examination seems to have influenced the court seriously against him. The decision was thus expressed:

> It is justifiable to consider whether or not Dr. Vallet, in view of the present status of roentgenology, was guilty of neglect in that he did not take advantage of the diagnostic help that roentgenology affords in doubtful cases. Although Prof. J. L. Faure testified before the court that the use of this method of exploration under the existing conditions seemed to him debatable, it is impossible to deny that roentgenology is a means of investigation that is becoming more and more common. From reliable authority, notably, Professor Potocki, Drs. Delherm and Laquerrière, and other well qualified roentgenologists, it appears that, in the matter of disclosing the fetus in utero, while it is true that roentgenography is not applicable during the first months of pregnancy, it does furnish a more or less distinct picture of the fetus from the fifth month on, and especially during the last two months.

At a recent session, the Société d'obstétrique et de gynécologie of Paris raised the question whether or not, in the present state of roentgenography, a surgeon may be justly censured for failing to make a roentgen-ray examination. Dr. L. Bouchacourt, director of the electroroentgenologic laboratory of the Maison municipale de santé, asserted that in the foregoing case the court went too far in declaring the omission of a rentgenographic examination a tort. If Vallet had refused to operate unless he secured a roentgenogram, negative as regards pregnancy, and the patient had consented and had been examined by a roentgenologist, the error would not have been avoided with certainty. Any one with even a moderate experience with obstetric roentgenology knows that in examinations of this kind a negative finding is valueless unless the roentgenologist not merely is skilful but also is provided with a high-power equipment and modern accessories; even under the best conditions, errors are still possible. For instance, Dr. Sejournet recently exhibited before the Société d'obstétrique et de gynécologie of Paris a negative roentgenogram whereas, several days later, the fetus of six months, dead and macerated, was found. The negative roentgenogram had been made in a laboratory of the Saint Antoine Hospital, which has been justly considered, for many years, the alma mater of French roentgenology.

Bouchacourt maintains, therefore, that the court of Rouen was in error in holding that the omission of a roentgen-ray

examination constituted culpable negligence on the part of Dr. Vallet. This method of diagnosing pregnancy is not in current use at the present time in France—not even in Paris. Under these circumstances, the court was not justified in imposing a penalty on a practitioner in a small town for not having insisted on a roentgen-ray examination before the operation.

The Control of Venereal Disease in the Army of the Rhine

Dr. Escher, of the army medical corps, recently published in the *Annales des maladies vénériennes* an interesting article on the control of venereal disease in the army of the Rhine. The prophylactic measures adopted include: (1) education and instruction of the men, and (2) regulation and repression of prostitution.

Instruction of the men is accomplished by means of lectures given by the regimental physicians and talks by noncommissioned officers. As a guide for the latter, a syllabus has been prepared which consists of questions and answers. Copies have been sent to each army corps. Each center or subcenter has been provided with a complete equipment of charts, a series of models and colored plates (collection of the Museum of Social Diseases in Dresden), a projecting lantern and a collection of pictures of the American type, with a view to making the lectures more attractive. This combination gives the lecturer an opportunity to stir the imagination of his hearers and to vary the illustrations so as to make the lectures interesting. The Foyer du Soldat (resembling somewhat the Y. M. C. A.) also organizes lectures by civilians, which are also illustrated by films of American origin. In fact, all forms of propaganda are employed in the antivenereal campaign organized by the German prophylaxis groups in the cities of the occupied region: museums, films, etc. The men are assembled in groups and the corps physicians act as guides and give necessary explanations. The regulation of prostitution is not very effective, as regulated prostitution is a small matter as compared with clandestine prostitution, which is widely prevalent in the occupied countries.

As far as possible, the French military authorities endeavor to cooperate with the Germans in the campaign against venereal disease. A joint committee on prophylaxis has been created for each province. The French and German committees study separately the problems of prophylaxis that arise, and then a joint meeting is held, and a plan of action is decided on. Resolutions are then drawn up and presented to the French and German authorities, and on acceptance acquire the force of law. This cooperation extends to each garrison; the French army physician and a physician representing the German government together determine the measures needed to check the spread of venereal disease. Dr. Escher states that collaboration between the physicians of the two nations is excellent. The results obtained during the past year have been so satisfactory that the German authorities have recently expressed the request that meetings of the joint committees be held more frequently on fixed dates.

A Relic

At the recent meeting of the Academy of Medicine, Professor Letulle presented the copy of the doctoral thesis of Laënnec which the latter used in defending his contentions before the examining body. It contains many marginal notes by the author of "Traité de l'auscultation médiate."

Concessions to Japanese Students

The council of the University of Paris has decided, at the suggestion of the president, to grant special concessions to Japanese students whose resources have been diminished or suppressed by the recent earthquake. Japanese students, therefore, who have suffered such losses but who wish, nevertheless, to begin or to continue their studies in the University of Paris will be relieved of all dues that would otherwise be collected for the benefit of the university.

The Selection of Hospital Externs

The Association professionnelle des externes et anciens externes des hôpitaux of Paris has recently addressed to the director of the Assistance publique a letter setting forth the difficulties that confront externs. The situation of students in general is highly unfortunate owing to the increased cost of living. The items of expense of a student in Paris in 1921 were estimated as follows:

A Student's Annual Expenses in Paris in 1921

	Francs
Cost of board and room at 500 francs a month	6,000
Clothing	1,000
Donations for charitable purposes	1,000
University dues (tuition, etc.)	190
Examination fees	55
Total	8,245

This estimate is below rather than above the actual cost today. The price of an exceedingly modest room for a student has risen from 150 to 200 francs, with an extra charge for heat during the winter months. An inquiry during the session of a recent congress elicited the information that, of the 25,000 students attending the university and various higher schools of learning in Paris, more than 11,000 were in need of help. The situation of medical students is especially unfortunate because of the duration of their daily studies, which leaves them no time to earn extra money as do students in other branches. The financial difficulties are still further increased for hospital externs. In view of the existing conditions, the Assistance publique allots to externs the sum of 4 francs a day. Estimating carfare at 3 francs, the daily compensation for the services of an extern amounts to 3 francs, or 1 franc for each hour of active service. The Association des externes requests that the compensation for externs be increased to 300 francs a month. The letter of the association adds that the externs would not have made this request, so natural did it seem to them to give their services gratuitously, were it not for the fact that half of the patients now pay the Assistance publique a relatively high price for the services they receive.

In Memory of Prof. Paul Reclus

M. Léon Bérard, minister of public instruction, in a speech at the dedication of the monument erected in honor of the fallen heroes of Orion, department of Basses-Pyrénées, paid homage to the memory of Dr. Paul Reclus, professor at the Faculté de médecine of Paris, who for many years, was mayor of the commune of Orion and general counselor for Basses-Pyrénées. During the course of the ceremonies, at which Prof. J. L. Faure and Prof. Marcel Labbé of the Faculté de médecine of Paris assisted, Bérard recalled the eminent services that Reclus had rendered to surgery, both operative and educational.

Personal

During the ceremonies to be held in connection with the annual reopening of the University of Paris, November 24, eight foreign scholars and scientists will be granted the title of doctor *honoris causa*. Physicians so honored are: Dr. C. Golgi, professor at the University of Pavia, and Dr. William Williams Keen, formerly professor in Jefferson Medical College, Philadelphia.

American Affairs Seen from Afar

It is curious to note the predilection with which certain journalists discuss matters of which they know little. Journalists of this type are found, unfortunately, even on the staffs of medical journals. I have referred in several letters to fantastic items on America that have appeared from time to

time in the *Vie médicale*, of which Dr. François Helme, until his recent death, was managing editor. Now the *Temps*, one of the principal dailies in Paris, has published an article by Dr. Henri Bouquet on insulin, for the general information of the public: "The discovery was made in America, where such discoveries are numerous; sometimes the inventions are supposed to be new over there when they concern things we have known for a long time. Other actual discoveries, when they have crossed the Atlantic, are found to have much less importance than was ascribed to them in America." Those who depend on the daily journals for information in regard to American discoveries may perhaps meet with such experience, but the daily press is notoriously not the place to seek exact information on scientific subjects.

LONDON

(From Our Regular Correspondent)

Nov. 5, 1923.

The Panel Struggle

The panel struggle has reached a further stage. The panel physicians have forced the government, as represented by the minister of health, to yield ground, although he had declared that his terms were final. This move will probably lead to a settlement. The Insurance Acts Committee of the British Medical Association, in conducting negotiations for the profession, had its hands greatly strengthened by resignations from the panel, amounting to 94 per cent. of the total physicians. The minister, appreciating the importance of an amicable settlement, made every effort to realize the standpoint of the profession and to arrive at one fair to all parties. In a letter to the British Medical Association, he has made these proposals:

1. He accepts the formula that medical benefit is, with sickness, disablement and maternity benefits, one of the primary benefits under the National Insurance Acts. Other benefits are additional and contingent on the foregoing being first provided. The question as to proper remuneration of the physicians is one to be determined on its merits by the government after due inquiry and negotiation with representatives of the profession. The foregoing is evidently intended to assure the profession that there is to be no control by the friendly societies, which, as stated before, is the main point on which the profession is fighting.

2. An impartial royal commission will be appointed to investigate and report on the whole system, the terms of reference to be agreed on with the profession.

3. Provided the Insurance Acts Committee of the British Medical Association appoints an actuary of suitable standing, the government actuary is prepared to meet him in consultation with a view to satisfying him that all relevant considerations have been taken into account in ascertaining the maximum that can be charged to insurance funds.

4. In England and Wales, $1,250,000 will be provided for the mileage fund and to meet other points raised with regard to rural physicians. These rural physicians, because of the distances they have to travel in visiting patients, have always been worse paid than town physicians—an example of the bungling that always follows government interference in private affairs.

5. A capitation fee of $5 is to be paid for five years (an advance of 12 cents on the previous offer) provided that, if during this period the commission mentioned suggests any material alteration in the conditions of service, the profession shall be free to reopen the question of remuneration.

As an alternative, the minister offers a special court of inquiry to report as soon as possible, hearing any evidence tendered on the part of the ministry, the profession, the approved societies, or other interested parties. This letter has been passed on to the panel physicians by the British Medical Association without any comment or suggestion. A further conference of panel physicians' representatives will take place, November 14, to consider the revised offer.

This offer is considered a victory by the panel physicians and a defeat by the friendly societies. The latter have been saying that if the physicians get more it must be subtracted from their additional benefit. The first declaration by the minister, given hereinbefore, makes clear that no one is entitled to additional benefits unless medical benefits are first satisfied. The societies, on the other hand, describe the minister as having been "brought to heel" by the physicians and as having given away part of the birthright of insured persons. They were promised by the government that if they managed their business prudently they would be able to grant additional benefits to their members, but they consider that this promise has been put behind whatever the physicians demand as remuneration. In a long statement addressed to the minister of health, the Emergency Committee of the societies declares that the allegation that the profession is fighting against domination or control by the societies is merely a cloak to obscure the real object—to secure money. They allege that the government has capitulated to the physicians, not because it was convinced of the merits of the case, but because it was faced with a strike. On no occasion from 1912 onward, when the physicians' fee was a matter of controversy between the profession and the government, were the societies consulted, nor was it proposed to take out of their fund, contributed for other purposes, any sum which might be agreed on between the contending parties. They declare that this is sheer spoliation, and that the sum which the minister proposes to take out of the societies' funds would provide the insured with an addition to their sickness benefit, or, alternatively, would provide the whole insured population with dental treatment. The sums paid in 1920 and 1921 to the physicians exceeded the sums paid in sickness benefit to the insured. The chairman of the committee described the minister's proposal as one to take away from the workers' fund $3,800,000.

The Nobel Prize and the Chair of Physiology at University College, London

The appointment of a young physiologist, Prof. A. V. Hill, F.R.S., of Manchester, to the chair of physiology at University College, London, is an event of the first importance in the medical world. In recent years, by the variety and importance of its original work, the Cambridge school, founded by Michael Foster, has been a leader. Next to it in this country is University College. Here, in succession, the chair of physiology has been held by a line of distinguished men whose names are written deep in British physiology—Sharpey, Burdon-Sanderson, Schäfer and Starling. On vacating his chair and introducing Professor Hill, Professor Starling described him as the leading British physiologist of his generation. Therefore a brief account of his unusual career and outlook should be of interest. Educated at Trinity College, Cambridge, where he was third wrangler in the mathematical tripos in 1907, he was led by Sir Walter Fletcher, F.R.S., then tutor of the college, to take up physiology. J. N. Langley, professor of physiology at Cambridge, suggested that he should investigate the oxidative removal of lactic acid by measurements of the heat production. Fletcher and Hopkins had just published their fundamental work on the formation of lactic acid in muscles during exercise, and its removal during recovery. Hill continued their work; but, approaching it as a mathematician and physicist, adopted a totally different technic. In 1911 he worked for six months in Germany. He visited Bürker at Tübingen, and studied the technic of myothermic observations. There he met Paschen (professor of physics), from whom he obtained the galvanometer used in his later work. Returning to the physiologic department at Cambridge, then in the zenith of

its fame, he worked side by side with a distinguished galaxy —Langley, Gaskell, Keith Lucas, Hopkins (who was discoving vitamins), Barcroft and others. Like Hopkins, Hill worked in a disused coal cellar. Professor Hill would like to regard the Nobel prize as a recognition of the Cambridge school and the wonderful collection of celebrated men among whom he worked in the laboratory. In spite of the inadequate accommodation, he regards the Cambridge Laboratory in 1912-1914 as the finest physiologic department that has ever existed. During the war, he did remarkably varied work. He was first an instructor of musketry. Then he formed and became director of the Anti-Aircraft Experimental Section of the Ministry of Munitions, in which he collected a number of physicists, mathematicians and engineers, who worked on the various problems of ordnance and instruments, fuses, range finders and sound locators, which were raised by the development of aircraft attack and defense. After the war, he resumed the investigation of muscular activities, working (by a different technic) along lines parallel to those of Meyerhof of Kiel. Hill had scarcely begun his duties at University College when the announcement was made that the Nobel prize for medicine had been divided between him and Meyerhof. Other researches which have added to Hill's reputation are on the physical chemistry of the carriage of gases by the blood, the nature of nervous excitation, the elasticity of living arteries and the calorimetry of animals.

Professor Hill brings to physiology the unusual training of the expert mathematician and the physicist, and therefore much is expected from the school over which he presides. Thanks to the Rockefeller Foundation, the physiologic department of University College has been rebuilt and considerably extended, and is the best equipped in this country. Many American students resort to it and receive a warm welcome. In his inaugural lecture, entitled "The Present Tendencies and Future Compass of Physiological Science," Hill attributed the present high standard of physiology in this country largely to the fact that here it is not the handmaiden of medicine, any more than physics is the handmaiden of chemistry. It has "its own needs, its own inspiration, its own problems, its own methods. Physiology is fundamentally the science how the living creature works, and should no more be led by apparent utility than physics is." But he is not indifferent to the needs of medicine in its "grievous and urgent problems." Of the present tendencies of physiology, the unparalleled advance in biochemistry in the last few years represents perhaps the most important one. Indeed, some enlightened and progressive chemists see the future development of organic chemistry partly in the realm of physical chemistry, but largely in that of biochemistry. In the past, biochemistry has dealt with comparatively simple problems, mainly with the analysis of the material of which the living cell is composed after it is dead. But when alive the cell presents a far more complex problem, to which biochemistry is now turning.

"Modern physics is getting inside the almost visible structure of the atom, chemistry inside the visible structure of the molecule, anatomy inside the visible structure of the tissue, and biochemistry inside the visible structure of the cell." Other tendencies which he described are toward a redistribution of duties between physiology and anatomy, toward the study of comparative physiology on the zoological side, toward a development of instrumental technic, and toward recognizing the importance of investigating normal man as the "experimental animal."

Humane Slaughtering

"Humane Slaughtering in Relation to Public Health" was the subject of the second annual Benjamin Ward Richardson memorial lecture, given by Sir Arthur Newsholme. He referred to Richardson as a chief promoter of the human regard for suffering, which distinguished the last from the preceding centuries. Newsholme advocated the closing of the smaller slaughter houses, where the maximum cruelty, nuisance and demoralization were found. He considered that a vast mass of avoidable suffering was associated with animal slaughtering in this country. There was more cruelty in the preliminaries of slaughtering than in the actual slaughtering itself. It ought to be possible to devise a method of slaughtering, possibly electrical, which would obviate the terrors of anticipation and avoid the uncertain cruelties of the present methods.

The Urine of the Monotremata

At a meeting of the Medical Sciences Club of South Australia, held at Adelaide University, Prof. T. B. Robertson made a report on the urine of a monotrema, *Echidna aculeata*, which is of great interest because it shows another connecting link between the lowest order of mammals, and birds and reptiles. It may be remembered that, like the latter, this curious Australian group has a single genito-urinary and intestinal aperture (cloaca), and lays eggs. Robertson's analyses show that the urine of *Echidna aculeata* is of the mammalian type in that 88 per cent. of the total nitrogen output is in the form of urea. But it differs from that of the majority of mammals in containing a considerable quantity of uric acid, 36 mg. per hundred cubic centimeters. In all mammals, except man and the chimpanzee, of which the urine has been investigated from this point of view, it has been found that uric acid is wholly or almost wholly absent, its place being taken by allantoin. The urine of *Echidna* could not be obtained in sufficient quantity for the direct determination of allantoin. The urea was determined by the urease method; and by autoclaving another specimen with concentrated hydrochloric acid, the ammonia derived from urea and allantoin was determined. The difference between the ammonia determinations in the two cases afforded a measure of the content of allantoin. Allowing for experimental errors, the uricolytic index, or percentage of uric acid converted into allantoin, did not exceed 25, whereas in other mammals it exceeds 90. The lowest uricolytic index previously observed in mammals, other than man and the chimpanzee, was obtained in a marsupial, the American opossum, which has been found to have an index of 79. *Echidna aculeata* therefore resembles mammals in that the greater part of the nitrogenous output is in the form of urea; but it resembles birds and reptiles in its inability to convert uric acid into allantoin.

MEXICO CITY

(From Our Regular Correspondent)

Oct. 27, 1923.

Research on the Wassermann Test

In the thesis required of all new members of the Academy of Medicine, Dr. G. González Aréchaga took as his subject some experiments on the technic of the Wassermann test. With each of his 178 subjects, he used three different methods: (1) alcoholic extract of syphilitic liver as antigen, and complement fixation at 37 C.; (2) the same antigen with complement fixation at 12 C. for four hours, and (3) Kaplan's cholesterinized antigen and complement fixation at 12 C. Among the subjects were twenty-four apparently healthy persons, and 154 patients with various stages of congenital or acquired syphilis. In addition, a similar comparative study was made with the cerebrospinal fluid of thirty-three of these patients. The results showed no errors in the positive reactions obtained with cholesterinized antigen and icebox incubation. Both modifications of the original technic yielded a rather significant increase in the proportion of positive tests, as the positive results with the three methods amounted, respectively, to 42.8, 52.5 and 62.9 per cent. While these fig-

ures appear low, they are really representative, as the group included patients under treatment and a number in the tertiary stage of the disease. Among the tests on the cerebrospinal fluid, the results with the three different methods were 54.5, 72.7 and 93.9 per cent., respectively. The hemolytic system used in all three methods was rabbit-antisheep. While the number of cases studied was small, its real importance consists in calling the attention of physicians in this country to the advantages of the Jacobsthal-Kaplan technic. This method has not been much used in laboratories here, as many workers, in accordance with European views, fear the danger of false positives and unnecessary complications of serologic work.

Congress on Criminology

As announced in advance in The Journal, there has just been held a national congress on crime, at which a number of the subjects discussed were closely related to preventive or curative medicine. Stress was laid on the need of vigorous measures to suppress the use of habit-forming drugs in prisons; and to facilitate medical examination of all criminals, and jail hygiene. Among the resolutions approved, some favored the establishment of juvenile courts and the suppression of the death penalty. It should be added that police reports show that murders and assaults have somewhat increased, especially in the last five years. The question of the sterilization of criminals was treated rather superficially, and ignorance of the subject among editorial writers is so great that the newspapers attacked the proposal, assuming that castration was intended as a substitute for other forms of punishment. They even overlooked the fact that at the recent congress on child welfare, the section of eugenics had already gone on record as favoring the measure. There was some surprise that the congress did not discuss the subject of medical experimentation in human subjects, as the second congress on tabardillo (typhus fever) approved a resolution recommending such experimentation, provided the prisoners consented. It seems, however, that no such measure can be enforced in Mexico, as the present criminal code specifically forbids it.

More Wizardry

Not many months have elapsed since a physician from San Francisco gave, in one of the dependencies of the National University, a lecture advising the use of electronic apparatus. Now, one Eugenio Leante has used the same place to exploit, in two lectures, his revolutionary views on medical subjects. The lectures by this so-called physician would be ludicrous, were it not for the fact that they were given on the university premises and had, in a way, official approval; one lecture was dedicated to the present secretary of education. Among other things, Leante asserted that: "pathogenic germs are not the cause of disease"; "to keep well one must guard against vices and not microbes"; "there is only one disease," and "smallpox vaccination should not be compulsory." He referred to Coué, whom he does not consider a pioneer; to Abrams, with whom he found fault for devoting too much importance to diagnosis, and finally to Pasteur, whom he attacked bitterly, explaining that the famous scientist was not a physician.

Dr. Ricardo Rode, a bacteriologist, was kind enough to take "Dr." Leante seriously, inviting him, since he did not believe in bacterial pathogenicity, to submit to an operation minus the usual aseptic precautions or to an inoculation with tetanus or diphtheria germs. The lecturer, however, declined graciously, flattering his foe with the designation "illustrious." In their eagerness to please Secretary Vasconcelos, of the department of education, several newspapers advertised Leante freely, published his picture on the front page, and stated that he had been appointed an "honorary doctor" by the Free School of Homeopathy. It must be pointed out that this free homeopathic school is a rudimentary institution to which a few tired working men go in the evenings to receive a few lessons, and where they obtain a degree in one or two years. It is regrettable that Mr. Vasconcelos should encourage propaganda against vaccination in a country such as Mexico where it is so much needed, and should destroy the harmony that ought to exist among government authorities. Antagonism must inevitably result between the department of public health, which is urging enforcement of vaccination as provided in the sanitary code and has even advised and ordered revaccination, and the department of education, which is pleading through unqualified lecturers for the spread of smallpox, a disease that was attacked by King Charles IV, more than a century ago.

Unconstitutionality of Industrial Compensation Law

The state of Vera Cruz enacted some time ago several laws compelling employers to furnish complete medical assistance and full pay to industrial workers who might be sick or injured, regardless of the nature of the disease or injury. Physicians employed by the state were sole judges when employers and employees disagreed as to the duration of the sickness or possible malingering. The employers, however, took a case to the federal courts, and the district judge for the state of Vera Cruz has decided that the law is unconstitutional.

BUDAPEST

(From Our Regular Correspondent)

Oct. 22, 1923.

Handicapped Children in Hungary

The annual meeting of the Hungarian Medicopedagogic Society was held, October 16 and 17. The first speaker was Dr. Paul Ranschburg, professor of neurology at the University of Budapest, who spoke on the means for combating the bodily deficiencies of children. He stated that in Hungary the number of children who are blind, deaf and dumb, insane, crippled, bodily and mentally deficient, or suffering from severe speech defect exceeds 100,000. The total population is only about 8,000,000. Many of these defects are preventable, and some are curable. Only a minority are attributable to pathologic conditions; the remainder are caused by poverty and neglect. Restoration of defective sense organs is still a utopian dream, but the situation is not quite without hope. The experimental transplantation of eyes by Koppanyi, in Vienna, affords a glimpse of possible new roads. Dr. Ranschburg related the case of a soldier, who lost a hand from a shrapnel wound. In its place one of his feet was sutured. This "hand" acquired a capacity of sensation within a relatively short time, and later, after prolonged exercise, such motor function that the man could work with a scythe and a hoe. Deafmutism is frequently associated with cretinism, and may recover with cure of the latter.

M. Philipp Rokenbiller, state secretary of the ministry of justice, discussed morality in the community. He related the case of a small girl who was obliged to undertake the care of the family in consequence of the death of her mother, and who killed a brother and sister to prevent them from dying of starvation. When interrogated by the police magistrate, she replied: "Well, you blame and curse me now, and you weep; but when we were starving, nobody did anything to help us." It is impossible to change morals by street patrols and police raids. To illustrate the effects of social conditions, he quoted the example of a drunken English woman. Of her 834 descendants, 106 were illegitimate, 187 prostitutes, 142 beggars, 64 workhouse inmates, 76 criminals and 7 murderers. Professor Joseph Imre, teacher of ophthalmology at the University of Budapest, spoke on blindness. He deems it absolutely necessary that the vision of school children be examined at stated intervals. Many children dis-

continue school because the parents do not know that proper glasses would enable the children to learn successfully. Prof. Michael Horwath spoke on the prevention of lameness. Many bodily deformities could be improved and some of them entirely cured; all are of slow development, and there is ample time for recognition and diagnosis. The worst evil is the stupidity of parents, who follow the advice of a neighbor to do nothing, as the child will "outgrow it."

Dr. Leopold Szondi, assistant at the pediatric clinic, spoke on the prevention of mental deficiency. About 45,000 such children are registered in the country, and the number of those not registered is probably as large. About one out of every eight or nine of these deficiencies is inherited from defective parents or is due to parental syphilis. If both father and mother are defective, 99 per cent. of the offspring will be defective. In countries where mental and physical examination is a legal prerequisite to marriage, the number of imbeciles is diminishing.

David Geguss, the chief justice of the juvenile court, discussed the community causes of the demoralization of children. The children of Budapest are surrounded on the streets by dirt, miserable dwellings, cold, illness, starvation and famine. Life on the streets is undisciplined and immoral; prostitution is carried on openly. For ten years, Geguss has fought for the erection of a juvenile detention home, in which young delinquents may be segregated from adults, from whom they learn only immorality and the hatred of work. He has suggested a special juvenile police force, which, however, has remained a plan only. From 80 to 90 per cent. of the young women are infected. The police refrain from making raids because the hospitals cannot accommodate the vast numbers.

Dr. Edmund Gangel, lecturer on forensic medicine at the University of Debreczen, spoke on the causes of lowered moral standards. They are due, he said, to faulty social adjustments: adverse family conditions, unemployment, and misery combined with alcohol, primitive intelligence of parents, brutal treatment, litigation between parents, and the neglect of children consequent on the employment of the parents. Motherlessness is a frequent cause. He asked for the development of a social policy, a radical change in dwellings (the state should build new homes), and prohibition of the sale of immoral books to children. If the next generation is to be educated properly, there must be fewer criminals and prostitutes permitted in their midst.

BERLIN

(From Our Regular Correspondent)

Oct. 27, 1923.

Pediatric Congress

At the recent congress of the Deutsche Gesellschaft für Kinderheilkunde, the principal topic on the program was "Internal Secretions." Professor Birk of Tübingen discussed the thymus gland. He asserted that in the anatomic structure of the gland there is no evidence of an endosecretory function. The results of experimental research are contradictory. Many investigators regard the gland as essential to life; others, however, including Birk, declare that loss of the thymus is unimportant; and the changes in the bones that have been observed are due to operative trauma, infection, and other causes. The tetanic manifestations Birk ascribes to a disturbance of endocrine balance, though he admits that there may be a remote effect of loss of the thymus on the parathyroid glands. Retardation of growth alone seems to have any direct connection with loss of the thymus. A secretion of the thymus gland also has a hypotonic effect on the heart and blood vessels, and a stimulative action on lymphocytes.

According to Thomas of Cologne, the central layer of the suprarenal gland degenerates during the first months of life, and its function is assumed by the medulla. In anencephalic monsters this change has already taken place during the fetal period; the immediate cause is always malformation of the brain. If certain portions of the brain are lacking, the embryonic suprarenal does not develop normally. Later changes in the brain exert no influence. Thomas discussed also the relations of the suprarenals to the gonads, the changes in the suprarenals in infections and avitaminoses, and the epinephrin content of the suprarenals under various circumstances, including hypo-adrenalism.

Schiff of Berlin discussed the function of the thyroid gland, and emphasized the inactivity of the colloid-free and iodin-free thyroid as shown by experiments on tadpoles. He considered also the question whether thyroidal hormones occur in the mother's milk. According to Schiff, thyroidal affections of childhood may be divided into two groups, according as there is or is not evidence of changed activity of the gland. He discussed acquired myxedema, the influence of the thyroid on growth, the importance of roentgenographic examinations to determine whether the myxedema is congenital or acquired, the relations between the thyroid and the nervous system, and the effects of the thyroid on metabolism. He showed, from experiments, that thyroidal substance exerts no influence on catabolism in infants, as it does in adults. He admitted that the thyroid is affected in endemic goiter, but asserted that the pathogenesis of endemic cretinism is different from that of sporadic cretinism. Hypothyroidism is rare in children. In many cases in which the clinical findings seem to point to hypothyroidism, no objective proof can be furnished. For purposes of diagnosis, Schiff attaches the greatest importance to the progression of the symptoms. Exophthalmic goiter is rare in children. Whether hyperthyroidism is more frequent has not been shown. The benign adenomas, which have been observed more frequently since the war, present no demonstrable disturbances in thyroidal secretion. Estimations of basal metabolism are the best test of the existence of hypothyroidism or hyperthyroidism. In hypothyroidism, the electrocardiogram also has some diagnostic value. Finally, the therapeutic use of thyroid substance was discussed. In nephroses it has been employed with varying success. Schiff has never succeeded, by administration of thyroid, in relieving the edema of spasmophilic children. Thyroid extract may be used in treating obesity, but Schiff is not convinced that there is such a thing as thyreogenic obesity. He has observed no improvement from the use of thyroid in anemia, but in benign adenomas the results are good. In myxedema the improvement, even with prolonged administration, progresses only to a certain point and then ceases.

Gött of Munich regards the anterior lobe of the pituitary body as one of the most important of the glands that influence growth; disturbance in its activity may result in dwarfism; hypersecretion leads to gigantism. Acromegalous changes occur in children, but true acromegaly has been diagnosed with certainty in only one case. Obesity, of typical distribution, is related to loss of function of certain parts of the pituitary body. In this form of obesity basal metabolism is not diminished, but the specific dynamic effect of the food intake is reduced. Gött called attention to the correlation of the pituitary body with the other endosecretory glands. The administration of extract of the anterior lobe has a favorable effect in some cases.

Free Consultation Service for Students

At the State Academy of Music in Berlin, a free consultation service has been opened for students suffering from affections incident to their profession. The service is in charge of Dr. Kurt Singer, who will also lecture on the medical aspects of music. Dr. Singer is director of the Berlin physicians' glee club.

Marriages

THOMAS JOHNS ROBINSON, Taunton, Mass., to Miss Eileen Roach Curley of East Bridgewater, October 30.

WILLIAM D. STROUD, Philadelphia, to Miss Agnes Hutchinson Shober of Rosemont, Pa., September 19.

EUGENE WEATHERLY, Athens, Ga., to Miss Amanda Lee Thurman of La Fayette, recently.

T. PERCEVAL GERSON, Los Angeles, to Miss Vera Daniels of Pasadena, Calif., November 3.

WILLIAM EDWARD GROVE to Miss Lucy Mellinger, both of Johnstown, Pa., September 20.

JOSEPH A. CARR, Olyphant, Pa., to Miss Eleanor M. Bonner of Philadelphia, October 27.

DANIEL CARSON GOODMAN to Miss Alma Rubens, both of New York, recently.

THOMAS G. SCOTT, Norwood, Ohio, to Miss Hazel Boaz of Cincinnati, recently.

ALBERT J. BOWLES to Miss Lillian Anderson, both of Portland, Ore., recently.

Deaths

Charles Gray Wagner, Binghamton, N. Y.; Medical Department of Columbia College, New York, 1882; lecturer on insanity at the Sage School of Philosophy (Cornell University) 1896-1900; member of the Medical Society of the State of New York; the American Psychiatric Association; formerly president of the American Medico-Psychological Association; superintendent of the Binghamton State Hospital since 1892; formerly on the staffs of the Presbyterian Hospital, New York, and the Utica (N. Y.) State Hospital; associate editor of the *American Journal of Insanity,* 1884-1892; aged 67; died, November 5, of chronic nephritis.

John Walter Perkins ✠ Kansas City, Mo.; Medical School of Harvard University, Boston, 1886; formerly professor of surgery at the University of Kansas School of Medicine, Rosedale; superintendent of the University Hospital; at one time on the staffs of St. Margaret's Hospital, Kansas City, Kan., and St. Joseph's Hospital, Kansas City, Mo.; aged 63; died, November 2, of pneumonia.

Robert Graham Wiatt ✠ University, Va.; Medical College of Virginia, Richmond, 1914; assistant professor of roentgenology at the University of Virginia Department of Medicine, Charlottesville; served in the M. C., U. S. Army, during the World War; aged 39; was instantly killed, November 2, in an automobile accident.

Alexander E. Garrow, Montreal, Que., Canada; McGill University Faculty of Medicine, Montreal, 1889; assistant professor of surgery at his alma mater; on the staff of the Royal Victoria Hospital; aged 61; died, November 8, of heart disease.

George Bancroft Gale ✠ Newark, N. J.; Medico-Chirurgical College of Philadelphia, 1896; member of the American Psychiatric Association; served in the M. C., U. S. Army, during the World War; aged 55; died, October 6, of heart disease.

Jose Lugo Vina, San Juan, P. R.; National School of Medicine, Mexico City, 1884; secretary of the Porto Rico Insular Board of Health; veteran of the Spanish-American War; aged 67; died, October 1, following a long illness.

John L. Priestman, Neponset, Ill.; Chicago Medical College, 1881; member of the Illinois State Medical Society; president of the State Bank of Neponset; aged 66; died, November 9, at Los Angeles, of cerebral hemorrhage.

Ezekiel Price Murdock, Chicago; Rush Medical College, Chicago, 1880; Civil War veteran; formerly superintendent of schools in Streator, Ill., Shelbyville, Ill., and Memphis, Mo.; aged 78; died, November 14.

Edison George Blaisdell, Bridport, Vt.; University of Vermont College of Medicine, Burlington, 1871; member of the Vermont State Medical Society; aged 76; was killed, October 16, when he fell from a tree.

George H. Turner, Douglasville, Ga.; Southern Medical College, Atlanta, 1898; served in the M. C., U. S. Army, during the World War; aged 45; died, October 23, at New Orleans, of cerebral hemorhage.

Joseph Jeremiah Flannery ✠ Des Moines, Iowa; Medical Department of Drake University, Des Moines, 1900; on the staff of the Mercy Hospital; aged 46; died, November 3, of bronchopneumonia.

Charles Harvey Zellner, Allentown, Pa.; Johns Hopkins University Medical Department, Baltimore, 1904; died, September 13, in New York, of injuries received in an automobile accident.

Robert Christian King, Hellertown, Pa.; Bellevue Hospital Medical College, New York, 1878; member of the Medical Society of the State of Pennsylvania; aged 67; died, September 30.

Lincoln P. Parkhurst, Grand Rapids, Mich.; Rush Medical College, Chicago, 1886; member of the Michigan State Medical Society; aged 58; died, November 3, following a long illness.

Nathan Silverstein, Scranton, Pa.; Jefferson Medical College of Philadelphia, 1909; member of the Medical Society of the State of Pennsylvania; aged 38; died, September 22.

Albert H. Simmons, Girard, Ill.; American Medical College, St. Louis, 1882; member of the Illinois State Medical Society; aged 67; died, November 1, of cerebral hemorrhage.

George Clarence Bluestone, New York; Syracuse (N. Y.) University College of Medicine, 1920; aged 26; died, September 6, of injuries received in an automobile accident.

Clarence Elmer Barton ✠ Baker, Ore.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1905; aged 48; died, October 26, at St. Elizabeth's Hospital, of tuberculosis.

Curt Edwin Hildebert Nicolai ✠ New York; University of Leipzig, Germany, 1881; on the staff of the Isabel Home; aged 66; died, October 25, of cerebral hemorrhage.

Wales Buel, Walesville, N. Y.; Bellevue Hospital Medical College, New York, 1867; formerly health officer of Whitestown; aged 87; died, October 23, of heart disease.

James H. McLain, Eaton, Ill.; Kentucky School of Medicine, Louisville, 1888; aged 58; died, October 8, of tuberculosis of the intestine and cirrhosis of the liver.

Clement A. Stone, Hastings, Neb.; John A. Creighton Medical College, Omaha, 1900; member of the Nebraska State Medical Association; aged 47; died, October 30.

Daniel B. Henry, Northville, Mich.; Detroit College of Medicine and Surgery, 1896; aged 51; died, October 29, from injuries received in an automobile accident.

James Foster Scott, Jr., Clovis, N. M.; Tennessee Medical College, Knoxville, 1896; formerly city physician of Knoxville, Tenn.; aged 51; died, October 24.

Stephen Douglas Large, Hopkins, Mo.; College of Physicians and Surgeons, Keokuk, Iowa, 1887; aged 62; died, October 30, of cerebral embolism.

Arthur Benjamin Harding, Castile, N. Y.; University of Buffalo (N. Y.) Department of Medicine, 1884; aged 64; died, October 20, of heart disease.

Lewis James Frink, Providence, R. I.; Dartmouth Medical School, Hanover, N. H., 1889; aged 70; died, October 31, following a long illness.

Cornelius Joseph Dacey ✠ Brocton, Mass.; Tufts College Medical School, Boston, 1901; aged 44; died, October 3, at Boston, of tuberculosis.

Alfred Crane, Brownville, Neb.; Northwestern Medical College, St. Joseph, Mo., 1881; aged 67; died, August 24, at Richmond, Va.

John H. Calvert, Milton, Ky.; University of Louisville (Ky.) Medical Department, 1881; aged 62; died, October 28, of pneumonia.

W. S. Sanderson, San Saba, Texas; Atlanta (Ga.) Medical College, 1875; aged 72; died, October 28, following a long illness.

James Calvin Thompson ✠ Pittsburgh; Bellevue Hospital Medical College, New York, 1882; aged 64; died, September 14.

Henry J. English, Grindstone, Pa.; Jefferson Medical College of Philadelphia, 1873; aged 74; died, October 25.

George D. Custer, Scio, Ohio; Columbus (Ohio) Medical College, 1884; aged 71; died in September of senility.

Thomas Leo Stanton, Boston; Medical School of Harvard University, Boston, 1894; aged 53; died, October 24.

George S. Catlin, Hartville, Wyo. (licensed, Wyoming, 1899); aged 79; died, September 9.

B. F. Jones, Muddy Fork, Ark. (years of practice); aged 87; died, October 27, of senility.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

IRIDINOL

Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following report. W. A. PUCKNER, Secretary.

About fifteen years ago, the idea occurred to nostrum manufacturers to exploit iridium as a medicament. "Iridium (Medicinal)" was put on the market by the Platinum Co. of America (THE JOURNAL A. M. A., April 23, 1910, p. 1389), and the same company manufactured "Iridinol," which was marketed by the P. H. Potter Chemical Co. (now P. H. Potter and Sons, Inc.), New York. Both products were, at that time, claimed to contain iridium and were marketed for a high price with grossly misleading therapeutic claims. Iridium (Medicinal) seems to have been abandoned, but Iridinol, advertised by P. H. Potter and Sons, Inc., as an "ethical preparation" continues to be sold to physicians as well as to the laity when occasion offers.

In the earliest advertising, Iridinol was claimed to be a "nontoxic preparation of iridium." At the time this claim was made, an examination made by the Chemical Laboratory of the A. M. A. revealed that the specimen contained iron, probably in the form of chlorid, and ammonium salts. Tests for iridium were negative. In view of the difficulty of detecting iridium, it is possible that traces of that metal may have been present, but the amount certainly was not very large. Regardless of the presence or absence of traces of iridium, there is not the slightest evidence for the therapeutic value of this metal in the conditions for which it is recommended by its exploiters. No reference to iridium can be found in such standard works on pharmacology as Sollman's, Cushny's, Meyer and Gottlieb's, Wood's and Bastedo's.

No longer in the printed advertising is a definite claim made for the presence of iridium in Iridinol. Instead the agents merely imply its presence as the following indefinite and meaningless statements show:

"Iridinol is a perfected aqueous solution of *one metallic element* (Italics ours.—ED.), containing within itself a radiant energy not absolutely definable, but proven to be non-toxic in any amount given. . . ." and "This 6% *solution of the metallic element* (Italics ours.—ED.) represents 30 grains of the element to the ounce of aqua."

The claims for the use of Iridinol have also undergone a change. Specific statements of its curative value have become general. Among the early claims were:

"Cases of anemia respond promptly to its blood-building action, and cases of rheumatism of long standing and extreme degree, show almost startling improvement from the first dose. Tertiary forms or the sequelae of syphilis are cured."

Iridinol was formerly exploited as an antiseptic and curative agent in gonorrheal infections, and was recommended in typhoid fever, influenza and as a "systemic alterative and antiseptic of similar action to gold and mercury, but with the very important advantage that *it is absolutely free from toxic or deleterious effect.*" Today the advertising material can be classed in two groups, that printed and that written by the promoters to the prospective users of Iridinol. In the printed advertising, at least, the claims for the use of Iridinol are less specific than formerly. It is recommended in anemia, rheumatism, specific blood diseases, diseases of the nose and throat, of stomach organs, liver and kidney, of the nervous system, diseases of children and as a systemic alterative. Such absurd claims are put forward as:

"Iridinol in its activities enters at once into the circulation, lowering the temperature, if too high, raising the temperature, if too low, in other words bringing it to normal. The same effect is noted on the pulse, bringing the pulse to normal, whether too low or too high."

The word "ethical" is used extensively in the Iridinol advertising in spite of the fact that, first, the preparation is of secret composition; second, the claims for the therapeutic value are not supported by any real evidence, and finally the methods of advertising are questionable. In one of the circulars, for instance, a quotation from "Rational Therapy" by Dr. Lerch of Tulane University is so used as to imply a recommendation by him for the use of Iridinol as a blood purifier, when, in reality, his statement is of the most general character and in no way connected with Iridinol. Again, in a letter written to a physician, Iridinol is recommended most strongly for the treatment of epilepsy. Further, there is evidence that the firm will sell Iridinol to the laity. A woman who wrote the firm regarding the product received in reply a letter which prescribed Iridinol for her only half-disclosed ailments and offered her the nostrum at $12 an ounce.

In view of the long-continued activities of P. H. Potter and Sons, Inc., in the promotion of Iridinol, the Council has authorized publication of this report for the information of physicians who may be importuned to use it.

Correspondence

EXCISION OF A V-SHAPED PIECE OF THE LOWER LIP VERSUS ROENTGEN-RAY OR RADIUM TREATMENT

To the Editor:—This morning (Nov. 3, 1923) a patient presented himself with a mass the size of an egg in the submental area and apparently somewhat fixed to the lower jaw. In March, seven months ago, a small ulcer on the lower lip was subjected to radium treatment and has healed, leaving a slight, umbilicated scar. The lesion, whatever its nature, had been present three months. It occupied the mucocutaneous border of the middle third of the left lower lip. It had apparently begun as a smokers' burn in a patient with bad teeth.

These cases are increasing in number. That is, the lesion on the lip heals, or apparently heals, after the application of roentgen rays or radium, and then, a few months or years later, glands appear in the neck, which, when removed, prove to be metastatic carcinoma.

I would appreciate an opportunity to present to the larger audience of the readers of THE JOURNAL the following facts:

Some years ago I made one report on the operative treatment and results of cancer of the lip, and there is in preparation a second report on a larger number of cases. The conclusions of the first report are confirmed by the restudy of both old and new material, and the ultimate results up to date.

If the lesion on the lip can be excised with a V-shaped piece and the wound closed without a plastic operation, there has never been a local recurrence, irrespective of the pathologic condition, whether the lesion was benign or malignant. This operation can be done under procain within one-half hour, and the patient should not lose more than a few hours from work.

The cost of such a minor operation in material and in time of patient and operator is small as compared with that of any other treatment, and it is my opinion that the results are the best.

The piece excised from the lower lip is subjected to microscopic study, and if the sections show cancer, the glands of the neck are removed (this can also be done under procain). When these glands show no evidence of metastasis, the percentage of cures has been 100. When the glands have shown metastasis, the percentage of cures in the first report was 50, and in the second report will be somewhat larger.

Now that the community is educated to seek advice early, the moment the lesion is observed on the lower lip, I am able to divide the cases observed and reported by me into the following classes:

1. The lesion on the mucocutaneous border of the lower lip is small, of short duration—a few days up to two weeks; it is of the type of a burn, a fever blister, a vesicle, keratosis or a wart. The patient smokes or chews; the teeth may be ragged and dirty. The majority of these lesions heal by removal of the causes—tobacco and ragged, dirty teeth and instructing the patient to keep the teeth clean and the lip lesion covered with petrolatum.

2. The lesion is of longer duration, but still distinctly benign—leukoplakia, or the chronic chapped lips of the smoker. Such lesions disappear when tobacco in every form is removed.

3. The lesion of the first group does not disappear under treatment, or, when seen, is of longer duration. In this group one cannot distinguish between the benign and the malignant, clinically.

4. The lesion is distinctly benign—a wart.

5. The lesion is distinctly cancer.

Groups 3, 4 and 5 should be subjected to immediate local excision under procain, and the operation on the glands of the neck performed, if the microscope pictures carcinoma in the primary lesion.

If, instead of operation, these patients are subjected to radium, roentgen rays, caustic paste, fulguration, cautery—all without microscopic study—the lesion in the first group will be permanently cured, but the treatment deserves no more credit than the treatment by the removal of the cause and cleanliness.

In Group 2, no treatment is of any value, unless the cause (tobacco) is removed, and if this is done any other treatment is unnecessary.

In Group 3, any other treatment that does not permit a microscopic study will lead to the false conclusion, in many of the cases, that the treatment has cured a local cancer; and if the local lesion is malignant, just as in Group 5, the removal by operation, or the destruction or healing by any other treatment, is but a minor part of the treatment. It is essential to ascertain whether the local lesion is cancer, and if it is, to remove completely the glands in the submaxillary and submental areas. Today there is every evidence that complete removal of the glands of the neck offers more than any other known treatment. There is apparently no objection to irradiate, either with roentgen rays or with radium, the lymphatic area before and after the thorough removal of the glands; but there seems no question that the removal of the glands is the essential feature. In those cases in which the microscope fails to show metastasis, postoperative irradiation is unnecessary.

I am willing to submit the accumulated evidence in the Surgical Pathological Laboratory of the Johns Hopkins Hospital to any investigating committee for comparison with roentgen-ray, radium or any other type of treatment. This second paper will soon be published. In view, however, of the growing tendency of members of the medical profession, not surgeons, to refer their patients with early lesions of the lower lip for roentgen-ray and radium treatment, it was my opinion that this warning, based on thirty years' experience with more than 500 cases, should be made, if possible, with the largest publicity.

At the present time more than 60 per cent. of the lesions that I have excised from the lower lip are microscopically benign, and of the remaining 40 per cent., in more than 75 per cent. the glands, when removed, show no evidence of metastasis.

JOSEPH COLT BLOODGOOD, M.D., Baltimore.

A USEFUL TRIFOCAL LENS COMBINATION FOR ELDERLY PERSONS

To the Editor:—A number of ear and throat specialists have found advantage in using trifocal lenses—a distance lens, the requisite presbyopic segment, and another segment cemented at the upper part of the distance lens to give the proper correction when looking through the perforation of the head mirror. Every person whose accommodative power has considerably declined finds that his vision beyond the near point for which his reading glass gives good vision, and inside the distance of 20 feet, is measurably dimmed. This is especially true of persons past 60 years of age. In experimenting with my own eyes, I found that my vision of objects around the office and of persons across the dinner table was much improved by making my distance correction half or three quarters of a diopter stronger than the normal. I then found that street car signs a block away as well as the faces of acquaintances were dimmed. To correct this I had some concave cements (—.75 D.) placed on the upper part of the distance lenses. With a lens 38 mm. high, this gives a middle space about 8 mm. high, which is ample. When one wishes to see a distant street car sign or the face of some person clearly, a slight dropping of the chin gives clear vision through the upper full distance correction.

I have found this combination a great satisfaction, and as opticians and physicians tell me they never heard of it before, I wish to pass it along.

EDWARD J. BROWN, M.D., Minneapolis.

"AN OVARIAN HORMONE"

To the Editor:—In THE JOURNAL, September 29, Dr. R. T. Frank of Denver criticized our preliminary report on "An Ovarian Hormone" (THE JOURNAL, September 8). That only one of his criticisms is justified will be seen when our experimental data and protocols are published. This criticism concerns our mistaken use of "hyperemia" for "hyperplasia" in a quotation from Dr. Frank's paper. This happened inadvertently in the revision of our manuscript for publication. We wish to acknowledge the error and sincerely apologize to Dr. Frank for our mistake. A copy of this letter is being sent to Dr. Frank.

EDGAR ALLEN, PH.D.,
EDWARD A. DOISY, PH.D.,
St. Louis.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

PARADICHLOROBENZENE AS INSECTICIDE

To the Editor:—Who has had the best chance to know the physiologic effect of Paradichlorobenzene, especially the local effect on the skin and the effect of its inhalation? It is now recommended by the government for peach borer. It is placed underground about trees to kill worms. Would it also destroy the scabies bug in the skin? What could come from such use, and how would you suggest that it be used?

L. J. SHARP, M.D., Commerce, Ga.

ANSWER.—Paradichlorobenzene was found by Galewsky (*Ztschr. textil. Ind.* 1915, p. 506) to be more efficient as a moth exterminator than any of the other commonly used insecticides. Duckett has reported that *p*-dichlorobenzene is an excellent insecticide when used as a fumigant (Bull. 167, U. S. Dept. Agric., 1915). Sollmann (*J. Pharmacol. & Exper. Therap.* **12**:133 [Oct.] 1918) found it toxic to earthworms, its effectiveness comparing favorably with that of oil of chenopodium. No toxic effects were noted in dogs, even after large doses internally (*J. Pharmacol. & Exper. Therap.* **14**:243 [Nov.] 1920). Under the proprietary name "Globol,"

p-dichlorobenzene has been considerably used in Europe against head lice, but it has been reported sometimes to cause blister.

We have no information about its use in scabies.

MIGRAINE AND EPILEPSY

To the Editor:—Will you please answer the following questions? 1. Are there any statistics showing the numerical incidence of migraine in any definite area, such as a state or a country? 2. Are there any statistics showing (*a*) the incidence of epilepsy among the descendants of all the migrainous persons in any country, state or locality, and (*b*) the numerical relation of epileptics and nonepileptics among such descendants? The point, which I see I have not made quite clear, is to determine the percentage of probability that epilepsy will develop in any descendant of an individual who has migraine but not epilepsy. 3. Recent writers on heredity assert, without qualification, that migraine and epilepsy are both simply different manifestations of one and the same mendelian character, which obeys the mendelian laws of heredity, such as the characters of tallness or shortness in peas. In the absence of any demonstrable pathology in the case of either disease it would seem that the identity of these two diseases, so different in their symptomatology and their effects on the welfare of the patient, can only be based on a very extensive study of statistics. Has the statistical study of these two symptom groups been sufficiently thorough and extensive to warrant the positive assertion that they are nothing more nor less than two modes of manifestation of one and the same pathologic—or biologic—entity? Please omit name. ———, M.D., Colorado.

ANSWER.—1. No.

2. No.

3. No, but that there is apparently some relationship between epilepsy and migraine, has been noted by many writers, on the basis of the close clinical relationship between some forms of migraine and epilepsy, and also on statistical analysis, though the latter has not been checked against a census of migraine in a normal population. That the migraine attack may alternate with epilepsy or precede it or follow it in an orderly sequence is a common observation and best illustrated by Gowers, in his "Borderland of Epilepsy." The most recent statistical analysis is by Buchanan (*Minnesota Med.* 3:536 [Nov.] 1920; *M. Rec.* **98**:807 [Nov. 13] 1920; *New York M. J.* **113**:45 [Jan. 8] 1921). He has studied the incidence of epilepsy and migraine in migrainous and epileptic groups of patients at the Mayo clinic, and finds a definite mendelian ratio in which migraine and epilepsy are inherited like unit characters, dominant and recessive. He believes that if two "pure strains" of migraine are crossed, the children will all have migraine; if a migrainous and an epileptic are crossed, the children will all have either or both, and that from the migrainous, epilepsy can be inherited.

PEPPERS IN THE DIET

To the Editor:—As a layman who has done some reading on the subject of diets, I am, of course, much interested in anything of this kind. In looking over the different diets, I do not see the mention of bell peppers or green peppers. I have rather come to regard these as of considerable value in the diet, especially for furnishing roughage. This roughage, furthermore, seems to retain more moisture, or retain moisture better, than the roughage furnished by many other fruits and vegetables, and I have been rather prone to urge the use of peppers in my own family; in fact, I consume them liberally myself. I am wondering, therefore, what objection, if any, there may be to their more general use in the diet? E. W. B———, Florida.

ANSWER.—Peppers probably have the same value in roughage as many other of the coarser vegetables. However, they would seem to have one disadvantage: They are foods which many people do not enjoy. Some cannot digest peppers, and in such persons they have a tendency to produce gastric distress.

HELEN KELLER

To the Editor:—I am not sure whether you have the information or not, but I do not know of another place to get the facts. Please inform me whether the statement is true that Helen Keller was made blind and deaf by quinin. I was under the impression that her misfortune was due to cerebrospinal meningitis.

A. D. STRICKLER, M.D., Lebanon, Pa.

ANSWER.—Helen Keller says in her book "The Story of My Life" that the physician's diagnosis of the illness that led to her condition was "acute congestion of the stomach and brain." According to Appleton's encyclopedia, "An attack of scarlet fever when she was 19 months old left her blind and deaf." Hitz says in the *American Journal of Anthropology*, "an acute attack of gastritis followed by a malignant fever." It seems, therefore, that Helen Keller's illness was due to some infectious disease, which, however, was not definitely determined. Forty years ago, bacteriology was just developing into a science. It seems doubtful that an accurate diagnosis can be established on the present available evidence. The diagnosis "congestion of the stomach and brain" means nothing. The more likely diagnosis would be scarlet fever or encephalitis.

WHOOPING COUGH VACCINE

To the Editor:—I am very anxious to have the following queries answered: What is the present status of the treatment of whooping cough with vaccine? What is the present view as to the prophylactic treatment, and the permanence of the immunity created, if any? Please omit my name and address. H. A., Missouri.

ANSWER.—In a series of articles on biologic therapy prepared under the auspices of the Council on Pharmacy and Chemistry, W. C. Davison (THE JOURNAL, Jan. 22, 1921, p. 242) concluded a review of the use of pertussis bacillus vaccine thus: "In summing up the prolific and somewhat contradictory literature on this subject, it may be concluded that injections of Bordet-Gengou bacillus vaccines may have a slight though unreliable prophylactic effect, and that therapeutic inoculations are of practically no value. Further experiments are necessary to raise this procedure from the limbo of nonspecific therapy."

The Council on Pharmacy and Chemistry has accepted pertussis bacillus vaccine for New and Nonofficial Remedies, but states in regard to the usefulness of the product: "The evidence indicating that it is of value for either prevention or treatment is very questionable, and the reports are conflicting."

SALIVATION IN PARALYSIS AGITANS

To the Editor:—I have a patient with paralysis agitans, and one of the most troublesome symptoms is excessive salivation. Could you suggest anything that will check this condition, not including belladonna?

F. VELA GONZALEZ, M.D., Monterrey, N. L., Mexico.

ANSWER.—The salivation of paralysis agitans is apparently due to overaction of the autonomic nerve supply, and the only group of drugs that are known to depress the function of these stimulant fibers are the alkaloids of the belladonna group, which include scopolamin and duboisin as well as atropin. Individual idiosyncrasies can sometimes be met by employing one of the alternatives. The symptom is often extremely annoying and may be impossible to control.

MORTALITY STATISTICS OF PHYSICIANS

To the Editor:—Where can I find something about the average age at death of physicians, the average length of time they have practiced, and the principal cause of death?

N. M. WHITEHILL, M.D., Boone, Iowa.

ANSWER.—In the first issue of THE JOURNAL each year appears an editorial analysis of the deaths of physicians during the previous year. From these analyses, it appears that the average age at death, during the last fifteen years, is 60. The greatest number of deaths occurred between 61 and 70. The average age at graduation is 26 years, and the average years of practice is thirty-three. The principal causes of death are: (1) diseases of the heart and circulatory system, (2) senility and (3) cerebral hemorrhage. The average annual mortality rate for the period from 1902 to 1922 was 15.52 per thousand.

PREADOLESCENT HYPOPITUITARISM

To the Editor:—In view of the fact that oral administration of pituitary extract is valueless, what is the present treatment of preadolescent hypopituitarism, accompanied by adiposity, etc.?

J. L., M.D., Mich.

ANSWER.—Hypophysial adiposity is sometimes the result of congenital syphilis; in such cases, antisyphilitic treatment will give good results, if given early. Other cases are due to hydrocephalus, the surgical treatment of which has so far not been satisfactory.

The Fecundity of Mediocrity.—Society may accomplish much by checking the multiplication of the feebleminded, the criminals and the insane; but how to keep from being swallowed up in the fecundity of mediocrity is a much more difficult problem.—Holmes: Studies in Evolution and Eugenics, New York, 1923.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

DELAWARE: Wilmington, December 11-13. Sec., Reg. Bd., Dr. P. S. Downs, Dover; Sec., Homeo. Bd., Dr. H. W. Howell, 824 Washington St., Wilmington.

KENTUCKY: Louisville, December 11. Sec., Dr. A. T. McCormack, State Board of Health Bldg., Louisville.

LOUISIANA: New Orleans, December 13-15. Sec., Dr. Roy B. Harrison, 1507 Hibernia Bank Bldg., New Orleans.

MARYLAND: Baltimore, December 11-14. Sec., Dr. J. McP. Scott, 141 W. Washington St., Hagerstown.

NORTH DAKOTA: Grand Forks, January 1-4. Sec., Dr. G. M. Williamson, 860 Belmont Ave., Grand Forks.

OHIO: Columbus, December 5-7. Sec., Dr. H. M. Platter, Hartman Hotel Bldg., Columbus.

OREGON: Portland, January 2-4. Sec., Dr. Urling C. Coe, Stevens Bldg., Portland.

VIRGINIA: Richmond, December 11-14. Sec., Dr. J. W. Preston, McBain Bldg., Roanoke.

CONNECTICUT'S BOGUS DIPLOMA INVESTIGATION

The Connecticut investigation in regard to bogus diplomas and loose methods of issuing licenses to practice medicine has had the result of bringing certain individuals into the limelight. The reports regarding one of these is as follows:

Donald W. Stewart

Dr. Donald W. Stewart of Broad Brook, Conn., has been brought prominently into the investigation. Stewart is reported to have failed at an examination held by the West Virginia Board of Medical Examiners in January, 1921, but passed the examination of the Connecticut State Board of Eclectic Medical Examiners in July, 1921. When he applied for examination in West Virginia, according to the report, he claimed to be a graduate of the Southern College of Medicine and Surgery of Atlanta, Ga., in 1914. A complete list of the matriculants and graduates of the school named, at the headquarters of the American Medical Association, does not include Stewart's name. A letter received under date of March 8, 1921, from Stewart states that his diploma from the Southern College of Medicine and Surgery was issued "in 1914, before the college ceased existence." After the college ceased to exist in 1914, however, it is known that diplomas were issued to several individuals whose names do not appear in the list of those who were regularly enrolled in and graduated from this school. If a diploma was issued to Donald W. Stewart, therefore, it was evidently issued in the same manner. Stewart has thus far failed to furnish a statement showing in what college and in what years he obtained his medical instruction.

According to present reports, when in 1921 Stewart applied for examination before the Connecticut Board of Eclectic Medical Examiners, he is reported to have sworn to the statement that he was a graduate of the "Atlanta Eclectic Medical College" in 1914. There is no record of any medical school having ever existed, reputable or otherwise, bearing that particular name. Documentary evidence in the files of the American Medical Association show that Stewart enrolled in the *freshman* class of another medical school less than a year prior to the date when he claims to have graduated from the Atlanta institution. A letter dated June 4, 1921, from the dean of the Lincoln Memorial University, Knoxville, Tenn., states that Stewart was matriculated in that institution in the fall of 1913, but that he "remained only a few days"; that he "completed no work," and that he did not return at any later time. Furthermore, a letter from the dean of the Hahnemann Medical College and Hospital of Philadelphia states that Stewart was enrolled in the *premedical* class of that institution in the fall of 1914, but that he did not finish the year and, therefore, received no credits. In the light of these statements, it is quite evident that Stewart did not complete the four years of study in any bona fide medical school which would entitle him legally to receive a degree in 1914. In that year, meanwhile, he was evidently only 21 years of age, since the records show that he was born (at Beaver, Pa.) in 1893.

It is reported that at the time Stewart applied for his Connecticut license, in his sworn statement, he claimed to have been in practice at Old Point Comfort, Va., for five years. Evidently, therefore, he did not go to Connecticut until in 1921, when he took the examination given by the Connecticut Board of Eclectic Examiners. Nevertheless, Stewart appears to have been welcomed with open arms by the Connecticut Eclectic Medical Society, since the reports now refer to him as a "former vice president" of that organization. In September, 1921, Stewart is said to have secured an internship in the New Britain (Conn.) General Hospital, but that shortly thereafter, owing to certain "alleged discrepancies in his statements of qualification," he was dropped from the staff, but in order that he might have "reasonable notice," was "allowed to withdraw from the hospital on December 1st after a due try-out."

Stewart was named in the validating bill[1] introduced in the 1923 session of the Connecticut legislature. The state health department is said to have canceled his previous license because the Atlanta Eclectic Medical College was not on the list of institutions approved by the Eclectic Board. The license appears to have been restored since, according to the report, the Eclectic Board promptly placed the school on its approved list—in spite of the fact that there is no evidence or record to show that any medical school by the name of the Atlanta Eclectic Medical College, bona fide or otherwise, ever existed at Atlanta. Through the restoring of Stewart's license it became unnecessary to include his name in the validating bill, so it was stricken off the day before the bill was called up for final action in the house of representatives.

The foregoing shows how easily one unqualified person (there were evidently many others) was enabled to secure legal authority to treat the sick in Connecticut. Stewart may have his license revoked, but how about the safeguards to prevent future scandals in licensure in that state?

NEEDED IMPROVEMENTS IN GRADUATE MEDICAL EDUCATION

The following general statement will make more clear the position of the Council on Medical Education and Hospitals in relation to graduate medical instruction. The Council's chief desire is to cooperate with the various postgraduate teaching institutions in bringing about certain improvements, in accordance with the principles concerning graduate medical education which were adopted by the House of Delegates of the American Medical Association last June.

The Council is not attempting to prevent any physician from getting any course he needs, nor is it trying to assume authority over any individual or graduate teaching institution, or to prevent them from offering to physicians any courses they see fit. If an institution desires to have the Council's endorsement of its work or of any particular course offered, however, it should not be unwilling to comply with the principles which have been laid down and which are believed to be fair and just.

The principles provide more abundant facilities for the further training of general practitioners; the fact being recognized that any course of instruction which will improve the physician's knowledge or skill will be of service, both to him and to his patients. At the same time, however, it is believed that he will secure much better courses of instruction if those courses are arranged in a graded series whereby he can progress from one course to another and know that he is continually advancing in his work instead of being forced, as at present, to make a selection from a maze of unstandardized short courses, which may or may not provide him with the instruction he most needs.

In regard to courses leading to the specialties, the Council is merely withholding its approval from the present-day tendency whereby many physicians are being permitted to rush into some specialty regardless as to whether or not they have developed the knowledge and skill which would justify such action. Here again, there is no attempt to prevent any physician from taking any course he desires, nor to hinder

1. List published last week in Further Diploma Mill Investigations in Connecticut, J. A. M. A. **81**: 1714 (Nov. 17) 1923.

an individual or institution from offering instruction in any course. The Council merely asks that such courses be given in accordance with certain principles if they are to have the Council's endorsement.

The principles adopted in regard to courses for the training of specialists are being applied chiefly to certain groups of courses which, to a deplorable extent, are being used as short cuts to the practice of specialties by many who have not attained the essential qualifications which should be required. Neither the American Medical Association nor any other body of self-respecting people would endorse such a procedure; nor should they appear to do so by failing to do what they can to prevent it. The Council is urging that such steps be taken, and is withholding its approval from certain courses until adequate safeguards against their abuse have been established by the institutions offering such courses. These safeguards can be established without much difficulty by the graduate medical schools, (*a*) by having their courses properly graded; (*b*) by ascertaining the educational and professional qualifications of the physician-students, and (*c*) by admitting to any course only those students who are found to possess the essential prerequisite work or training. Such grading is, indeed, more essential for graduate students than for undergraduates, since the qualifications of the former now vary to a greater extent.

The courses which are most commonly utilized as short cuts are as follows:

Operative Surgery* (except emergency surgery*).
Surgical Pathology.
Surgical Laboratory Technic.
Dog and Cadaver Surgery.*

* Or like courses in orthopedic surgery, urology, gynecology, ophthalmology and otolaryngology.

As now given, most of these courses fail to provide even the minimum requisite knowledge of diagnostic, laboratory or operative technic, much less the essential review courses in the preclinical sciences; the needed experience in the examination of patients; the diagnosis of the diseases covered by the specialty, and particularly the recognition of conditions which require operative treatment. Furthermore, the courses offered are independent of and make no provision for residencies or advanced internships where the graduate student can subsequently develop skill in applying his special knowledge in the care and treatment of human beings while still under the supervision of a physician who is recognized as an expert in the particular specialty before he begins his operative procedures in his own independent practice. These principles apply particularly to the surgical specialties and to the application of operative procedures, since a surgical operation, on the eye, for example, may needlessly handicap a patient for the balance of his lifetime. The portion of the principles regarding graduate medical schools which bear on this particular matter are as follows (paragraph 4):

> Any institution offering work in any specialty, therefore, should provide (*a*) review courses in anatomy, pathology, and the other basic preclinical sciences which apply to the respective specialties; (*b*) clinics in which students can have the opportunity personally to examine patients in hospital wards and outpatient departments and in which various therapeutic and operative procedures can be demonstrated; (*c*) courses of operative and laboratory technic, and (*d*)—to be assigned only when the student's previous training will warrant—assistantships in which, under the supervision of a physician already having recognized skill in the particular specialty, he can gradually assume responsibility in the diagnosis and therapeutic or operative treatment of the sick.

In this paragraph also it is provided that the courses of instruction should be "so graded that the student, if he desires, can obtain progressive work in a continuous course of two or three years," or if he prefers he can secure the same work in a series of shorter courses "so graded that, in effect, they would be segments of and, in total, the time and educational equivalent of the longer courses."

Where courses leading to specialization in any of the subjects enumerated are properly graded, and where the graduate school carefully investigates the previous training of the individual physician before assigning him to courses of instruction, it will not matter so much whether the student is merely preparing himself for better work in his general practice, or whether he is intending later to practice as a specialist.

The investigations during the last few years of the various postgraduate medical schools show the deplorable lack of courses to which any standardizing body could give an unqualified approval merely because they are not graded and are not being administered in accordance with any definite principles or standards. It is gratifying to know that already the majority of the postgraduate teaching institutions have abandoned, or expressed their willingness to abandon, the giving of higher degrees or diploma-like certificates to students taking short courses. It is the Council's desire to cooperate most heartily with any institution in an effort to develop their graduate teaching so as to provide in the United States more well organized and well administered opportunities for graduate instruction. This is clearly the greatest need in medical education today.

Social Medicine and Medical Economics

NATIONAL RESEARCH COUNCIL COMMITTEE FOR RESEARCH ON SEX PROBLEMS

A Statement of Purpose and Policy

EARL F. ZINN
Executive Secretary of the Committee
NEW YORK

This statement concerning the Committee for Research on Sex Problems, Division of Medical Sciences of the National Research Council, is presented primarily to record the fact of a serious attempt to further systematic research on sex problems. The report, however, may be of interest not only with reference to specific information relating to research on sex problems but also as an example of a method by means of which a comprehensive research project may be attacked by the cooperation of various institutions and individuals through the National Research Council.

This committee was organized in November, 1921, for the purpose of promoting, coordinating and systematizing research on sex problems to the end that conclusions now held might be evaluated and a better understanding of human sexuality obtained. The committee consists of:

Dr. W. B. Cannon, professor of physiology in the Medical School of Harvard University.

Dr. E. G. Conklin,* professor of biology in Princeton University.

Dr. Katharine Bement Davis, general secretary, Bureau of Social Hygiene, New York.

Dr. Thomas W. Salmon, professor of psychiatry in the Columbia University College of Physicians and Surgeons, formerly medical director for the National Committee for Mental Hygiene.

Dr. R. M. Yerkes, chairman of the division of research information of the National Research Council, formerly professor of psychology in the University of Minnesota (chairman).

Mr. Earl F. Zinn, formerly in charge of research promotion for the American Social Hygiene Association, was appointed executive secretary of the committee.

Though this project was motivated originally by the need for a better understanding of sex in its human aspect, this was not interpreted by the National Research Council or the committee to mean that investigations were to be limited to those of a technological nature determined by the needs of medicine, education and hygiene. The pressing need for useful knowledge was realized; and while it was agreed that these problems should be given all possible consideration, it was the opinion of those responsible for the project that its objective should be more inclusive; that in addition to contributing to the alleviation of current individual and social sex problems, it should also aim at a better understanding of the underlying factors—biologic, physiologic and psycho-

* Professor Conklin resigned from the committee, July 1, 1922, and Prof. F. R. Lillie, professor of embryology in the University of Chicago, was appointed in his place.

logic—which are basic to any real understanding of human sexuality. This conception markedly extended the scope of the project, and brought the realization that its systematic development would be a matter of years.

After a brief study of the problem, the purposes and policy were tentatively defined as follows:

In formulating the purpose and policy of the Committee for Research on Sex Problems, it is not implied that no work of value on sex problems is being done, or that biological research is unsystematic and uncoordinated. Much valuable work on sex has been done or is in progress, and there is constant effort to systematize and coordinate biological research in terms of each science, as rapidly as development of method and resources permit. It is in relation to sex problems per se that no concerted effort to stimulate, systematize and coordinate research has been made. From this angle, research on sex problems is sporadic, and, as a result, our knowledge is chaotic. Much that is of value will undoubtedly be learned from research as conducted at present, but, from the standpoint of urgent sex problems, it will be incidental. More rapid progress toward an understanding of sex in its many phases will result, if, in addition to the work now being done, a systematic attack from the angles of all related sciences, with knowledge of sex as the central objective, is made. This is the main purpose of the committee. Stated concisely, it is: *To conduct, stimulate, foster, systematize and coordinate research on sex problems, to the end that the conclusions now held may be evaluated and our scientific knowledge in this field increased as rapidly as possible.*

It is the policy of this committee:

1. To interest scientific workers in this project to the end that their cooperation and aid in the formulation of problems and technic for their study may be secured.
2. To utilize existing agencies in the study of such problems.
3. To be responsible for the wise expenditure of funds secured for this work.
4. To conduct types of research not requiring laboratory facilities. (Utilizing its secretary and clerical staff here.)
5. To encourage younger workers of promise to shape their training for work in this field.

A preliminary survey of the research situation elicited an enthusiastic response from scientific workers, and revealed a number of investigations of obvious fundamental importance in progress or proposed. Some of these, it was found, could be disproportionately extended with financial aid. Others could be undertaken whenever funds were available. An appropriation was made by the Bureau of Social Hygiene, whereupon the committee voted grants to the following institutions:

University of Minnesota, work under the direction of Dr. K. S. Lashley. Problem: Investigation of the sensorimotor and glandular components of sexual behavior in the rat.

Harvard University, work under the direction of Dr. Roger I. Lee. Problem: Inquiry into the norm of sex life of university students.

University of California, work under the direction of Dr. Herbert M. Evans. Problem: A study of nutritional and glandular factors in relation to the estrous cycle in the rat.

Cornell Medical School, Cornell University, work under the direction of Dr. C. R. Stockard. Problem: A study of glandular factors in relation to the estrous cycle in the guinea-pig.

Johns Hopkins University, work under the direction of Dr. D. R. Hooker. Problem: A study of the effects of roentgen irradiation on reproduction.

University of Chicago, work under the direction of Dr. F. R. Lillie. Problem: A Study of the sex hormones and the effects of castration and gonad transplantation, with special reference to birds and mammals.

University of Texas, work under the direction of Dr. T. S. Painter. Problem: Mammalian and human spermatogenesis.

State University of Iowa, work under the direction of Dr. B. T. Baldwin. Problem: To determine the relation of pubescence in boys to the appearance of sperm cells.

Phipps Clinic, Johns Hopkins Hospital, work under the direction of Dr. Adolf Meyer. Problem: Collation of replies to a sex questionnaire to medical students and other persons; and organization of detailed observations of the sex life of selected groups over a period of time.

Stanford University, work under the direction of Dr. Calvin P. Stone. Problem: A study of the sexual behavior of white rats as correlated with known anatomic and physiologic changes induced by chronic and acute inanition.

While it was realized that the adoption of an opportunistic policy such as that which determined the selection of the investigations mentioned above would tend to stimulate research on sex problems, it was apparent that it could not contribute directly to the task of coordinating and systematizing research in relation to the major objective, namely, a better understanding of human sexuality. It was evident that major lines of investigation must be marked out if the project were not to flounder hopelessly in this complex field. The following subdivisions were selected, with recognition, however, that they would have to be further subdivided as the study progressed:

1. Biology of sex (systematic and genetic aspects).
2. Physiology of sex and reproduction.
3. Psychobiology of sex (infrahuman).
4. Psychobiology of sex (human, including individual, anthropologic, ethnologic, sociopsychologic aspects).

To facilitate coordination, it was decided to bring related investigations together in a single institution or laboratory wherever possible. During the past year this plan has been followed with the biologic investigations, this work centering in the University of Chicago under the direction of Dr. F. R. Lillie. It has been partially followed in the physiologic investigations, the major support going to Dr. Herbert M. Evans in the University of California and to Dr. C. R. Stockard in the Cornell University Medical College. A suitable center in which to concentrate the infrahuman psychobiologic investigations does not exist in this country at present. Hence it has been necessary to continue to support isolated investigations. This is also the case with the human studies.

The committee is continuing its study of the general problem with a view toward defining with increasing clarity the field in which research should be fostered and promoted, and is endeavoring to coordinate this work by bringing together related investigations in suitable centers as rapidly as conditions warrant. This does not mean, however, that individuals working outside such centers may not qualify for support from committee funds. Qualified investigators are invited to submit research plans and estimates of costs, which will be considered on the basis of merit in relation to the program as outlined thus far. For the support of this program to June 30, 1925, the Bureau of Social Hygiene recently appropriated the sum of $100,000.

A more detailed statement of the development and progress of this work is being prepared, and will be issued as a separate bulletin by the National Research Council. Research projects submitted for the consideration of the committee, and requests for more detailed information regarding its work, should be addressed to the Committee for Research on Sex Problems, Earl F. Zinn, Executive Secretary, 370 Seventh Avenue, New York City.

THE LAW OF LIBEL: A LESSON FOR PHYSICIANS

A lesson of interest to physicians is embodied in the case of *Middler* v. *Hamilton*, recently decided in the Transvaal Division of the Supreme Court, as reported in the *South African Medical Record* (**21**:409 [Sept. 8] 1923). The defendant, the medical officer of the Randfontein Hospital, complained to the finance committee of the hospital that the matron was incompetent. Thereupon she sued him for libel. The defendant pleaded justification and that the communication was privileged. Judgment in his favor in the lower court was reversed on appeal, and damages and costs were awarded against him. The court apparently found the plea of justification not supported by the evidence. The defendant's complaint to the finance committee was held not to be privileged, because the finance committee had no power to deal with such complaints and the defendant took no steps to bring the matter before the general committee, which did have such power. Apparently the fact that the defendant took no steps to make his complaint effective by bringing it to the attention of the committee that might have acted on it afforded grounds for the inference that the complaint to the finance committee was not made with the best interests of the hospital at heart, but from other motives. A communication of this kind, to be privileged, must be not only privileged in substance but must be addressed to the proper party.

Book Notices

NON-SURGICAL DRAINAGE OF THE GALL TRACT. A Treatise Concerned With the Diagnosis and Treatment of Certain Diseases of the Biliary and Allied Systems, in Their Relation to Gastro-Enterology and General Clinical Medicine. By B. B. Vincent Lyon, A.B., M.D., Chief of Clinic, Gastro-Intestinal Department of the Jefferson Hospital. Cloth. Price, $10. Pp. 640, with 185 illustrations. Philadelphia: Lea & Febiger, 1923.

Dr. Lyon here presents a description of his method of nonsurgical drainage. In collaboration with other clinicians, he includes a consideration of clinical methods of diagnosis, such as history taking, laboratory methods of examination and physical examination. He gives an elaborate description of his technic, and concludes with a citation of numerous case histories in which his procedure has been used. The book is well written, and were it not for numerous statements that cannot be passed by the skeptic without challenge, it would be almost convincing. Dr. Lyon believes that his procedure is based on scientific principles that are soundly established. This is questionable. Dr. Meltzer's theory of the law of contrary innervation has never been positively established. Yet the author accepts it as a proved fact. Later on in his book he states as an accepted fact that the gallbladder empties itself by contraction. Contractile power of the gallbladder has never been shown. On the contrary, the gallbladder empties itself slowly. The statement that removal of the gallbladder tends to a dilatation of the bile tracts, a forcing open of the sphincter of Oddi as a result of muscular exhaustion and changing a normal intermittent to a continuous discharge of bile, leading to possible grave disturbances in certain cases, has neither clinical nor experimental foundation. Nor does a review of the literature, and the opinion of surgeons in large hospitals, warrant the extravagant statement that in the direct evidence it furnishes us, his procedure far surpasses any diagnostic method yet available. It is true that a flow of bile may follow the administration of magnesium sulphate or olive oil. The treatment of gallbladder disease by olive oil or Epsom salt is an old method. The statement, however, that Epsom salt is changed in the stomach by hydrochloric acid has no proof. These statements are quite in line with such unscientific statements in a modern textbook as "lazy liver" and "biliousness." It would seem as if the author were contradicting himself by the use of such terms. If the liver were really at fault, then certainly gallbladder drainage would be of no avail. What is really wanted is liver drainage. This does happen when the gastro-intestinal tract is stimulated to activity, and is not the result of the work of contrary innervation in the gallbladder. In his lengthy controversy with the opponents of his procedure, he will not convince the reader of the correctness of his contentions. The readily resorted to criticism of inexperience, inaccuracy of technic or unphysiologic surroundings, such as Franzen's work with a biliary fistula and other similar criticism, does not answer. As well say that Pawlow's work was unconvincing because it was done under unphysiologic surroundings. There are numerous statements that cannot pass without challenge that will only be mentioned. Physiologic block is considered a fact, even though no evidence of such a condition has been adduced. The author assumes a difference between catarrh and infection of the gallbladder. A description of such a difference would be welcome. In another place the author speaks of feebly contractive power of an infected gallbladder as though the existence of a strongly contracting power subject to stimulation had already been established. Likewise, what is the difference between cholecystitis, etc., with and without infection? The author speaks repeatedly of draining empyema of the gallbladder. It is remarkable that a closed sac of pus should yield first to relaxation of Oddi's sphincter, and finally can be cured by biweekly or even daily aspiration, even with the tube continuously in place. More interesting than this is the statement, "If the microscopic picture of excessive necrosis suggests possible gangrene, the treatment should be stopped and resumed in a day or two if conditions permit." Gangrene of the gallbladder is associated with very acute symptoms and threatening results, unless surgical intervention occurs. Yet the author claims restoration of a gangrenous gallbladder to its normal condition by nonsurgical biliary drainage. This would, indeed, be a wonderful cure, were it not fraught with dire consequences to the patient. The diseases amenable to treatment by this method range from simple gallbladder atony (?) through all the grades of gallbladder and liver diseases to pernicious anemia, melancholia and biliary migraine (?). Chronic biliousness is also an indication for treatment, although what it is would be welcome information to the physician. Even the pancreas can be drained by nonsurgical measures. In addition to biliary drainage, Dr. Lyon places his patients on restricted diets, and administers various and numerous nonaccepted, proprietary preparations, as senna agar, gastron, caroid, antacids, Gude's peptomangan, bile salts for torpid livers, and veracolate pills, as indications for their use arise. He has had no favorable results with intestinal antiseptics. Treatment is further supplemented by the high frequency current to the lower thoracic and lumbar vertebra, sparking in atonic, and close contact in spastic constipation. It is not for the reviewer to condemn the method and show it to be without any virtues. The book is a good exposition of diseases of the gallbladder. If the method is generally accepted as a form of treatment on its merits, it will be to the credit of Dr. Lyon. Extravagant and unscientific statements, however, should find no room in such a book.

TUBERCLE BACILLUS INFECTION AND TUBERCULOSIS IN MAN AND ANIMALS. Processes of Infection and Resistance. A Biological and Experimental Study. By Albert Calmette, Associate Director of the Pasteur Institute, Paris. Authorized translation by Willard B. Soper, M.D., and George H. Smith, Ph.D. Second edition. Cloth. Price, $8. Pp. 714, with 56 illustrations. Baltimore: Williams & Wilkins Company, 1923.

The second French edition of this book has already been reviewed in these columns. We may repeat that in it we have the product of an able investigator who has given many of the best years of his life to the study of tuberculosis in a broad, scientific way. The point of view from which the book is written is that of the experimental pathologist rather than the clinician, but no field is neglected that bears on the essential nature of tuberculosis. Special emphasis is laid on immunology, and unusual attention is devoted to bovine tuberculosis and preventive vaccination against it, a subject that must have loomed large in the author's mind in the four terrible years of internment following the closure of his experiments in this direction, forced by the German occupation of Lille.

FIRST AID X-RAY ATLAS OF FRACTURES AND DISLOCATIONS, INCLUDING ILLUSTRATED DESCRIPTION OF THE SKELETON. By H. C. Orrin, O.B.E., F.R.C.S., Surgeon, Ministry of Pensions Orthopaedic Hospital. Cloth. Price, $1. Pp. 77, with 46 illustrations. New York: Paul B. Hoeber, Inc., 1923.

This production has followed the author's "First Aid X-Ray Atlas of the Arteries." The subject matter is brief and concise. The attempt has been made to supplement, with roentgenograms, the diagrams of the skeleton used to illustrate the positions of the bony fragments in fractures and dislocations. The cardinal signs and symptoms in diagnosis are stated in each type of fracture. This is followed by the emergency method of treatment best suited for the case. No new method has been brought forth in this book. To the practitioner it is of little value. It might be of some service in the primary instruction of undergraduates, nurses, and public agencies dealing with the emergency care of injuries.

CHIRURGIE DE LA TÊTE ET DU COU. Par Ch. Lenormant et Pierre Brocq. Sixth edition. Cloth. Price, 12 francs. Pp. 338, with 245 illustrations. Paris: Masson et Cie, 1923.

This volume is one of a series on surgical practice, and is limited to the head and neck. The surgical anatomy and one operative procedure of proved merit are considered for each of the various regions. For the most part, fairly standardized operations are followed. The chapter on plastic work is good. A little more space might be given to operations on the thyroid. There is no mention of cervical rib, diverticulum of the esophagus, thyroglossal cyst or several other conditions not infrequently encountered. A few virtually obsolete operations are included. The illustrations are fairly well chosen.

Medicolegal

Insured Leaving House to Go for Medical Treatment

(Mutual Ben. Health & Acc. Ass'n v. McDonald (Colo.), 215 Pac. R. 135)

The Supreme Court of Colorado, in affirming a judgment in favor of the plaintiff on a policy of indemnity issued by the defendant association, says that the policy provided that any accidental injury resulting in septicemia should be classed and paid for as sickness as set forth in paragraphs which made a distinction between total disability resulting from sickness and "confining the insured continuously within doors," and that which did not confine him continuously within doors. The plaintiff was attacked and bitten by a ferocious dog, thereby sustaining bodily injuries which resulted in septicemia, as a result of which he had been totally disabled from the day that he was bitten, and prevented from attending to any business. He did not leave his home or go out of his house for about eight weeks, but during that period was treated at his home by a physician. After that, approximately once each week, he left his home and rode in the street cars to Denver, a distance of about 6 miles, for the sole purpose of receiving medical treatment for his injury. The defendant contended that from the time the plaintiff first left the house and went to Denver he was no longer entitled to full indemnity. But the court is of the opinion that the interruption or break in the confinement of the insured within doors was not such a departure from the contract, or in such violation of its provisions, as to defeat a recovery of full indemnity.

If an insured may not, without violating his policy, leave his house for any purpose, but must continuously or strictly stay within doors every moment of the period for which full indemnity is asked, then he could not leave it in case of fire or destruction, or even step out on a porch or veranda for fresh air, or take "outdoor" treatment for tuberculosis, acting under the advice of his physician. These are extreme illustrations, but they show the necessity of applying reasonable, not harsh, unnatural rules of construction to such words. Again, this policy contained the additional provision that it did not cover disability while the insured was not continuously under the professional care and regular attendance, at least once a week, of a licensed physician or surgeon. Limiting clauses should be construed in connection with all other provisions of the contract, including in this case the one just mentioned, which makes it imperative for the insured to have professional care and attendance. He is supposed to follow, and would be justified in obeying, his physician's advice and directions. The "care and attendance" are not required to be given in the house. It might be, as when some unusual surgical operation, or a roentgenographic examination, is imperative, that only at the physician's office or at a hospital could the patient receive their benefits; but, if the construction of the defendant was correct, the insured, even though so directed by his physician, if he left his house to ride in a street car to go to Denver to undergo the operation or to submit to the examination, would forfeit his right to full indemnity from the moment he left his house to make the journey, even though during all the weeks within the time limit of the policy he was totally unable to pursue his usual vocation. No such construction should be put on a clause of limitation as would make it repugnant to, or inconsistent with, another provision of the same contract with which the insured must comply in order to be entitled to any indemnity at all.

Fees for Waiting Experts Not Required to Testify

(Jones v. Antrim Circuit Judge (Mich.), 193 N. W. R. 873)

The Supreme Court of Michigan says that in this proceeding the plaintiff sought an order requiring the defendant, circuit judge, to retax the costs awarded against her in an unsuccessful will contest, in which the trial judge had, among other things, fixed the sum to be taxed for three expert medical witnesses at $25 a day each. The will contest involved the mental competence of the testatrix, but late in the trial that issue was abandoned. Usually expert medical witnesses are asked hypothetic questions, and there is no need of their sitting in court to listen to the evidence. These experts, however, were from a distance, and the exigencies of the trial might have required calling them at almost any time, and the contestant of the will in raising the issue of want of mental capacity on the part of the testatrix could not complain on being taxed with the cost so incurred to meet that issue. But, it was said, the experts were not sworn as witnesses. The contestant's withdrawal of the issue of mental incompetence of the testatrix rendered the evidence of the experts unnecessary.

The order of the court fixing the sum to be paid the experts was made about nine months after the trial and, it was contended, without notice or showing of the character of their proposed testimony, and the attention of the supreme court was directed to Section 12559, Compiled Laws of Michigan of 1915, which provides, in substance, that expert witnesses shall receive extra compensation only when they testify to matters of opinion and not to established facts or deductions of science. The record before the supreme court did not disclose the character of the testimony the experts would have given had the contestant stood fast to the issue calling for their attendance, but this court may assume that the trial judge had a pretty fair inkling that they were present to testify to matters of opinion. It appeared from the return of the circuit judge that the order fixing the compensation to be paid the expert witnesses was made by a judge of another circuit presiding at the trial, and was actually made on application in open court, during the trial of the cause, and was opposed by the contestant, but later the order was signed by the judge presiding and filed in the case. The order so made stood unappealed and was authorized by Act 404, Public Acts of 1919, which provides that:

> No expert witness shall be paid, or receive as compensation in any given case for his services as such, a sum in excess of the ordinary witness fees provided by law, unless the court before whom such witness is to appear, or has appeared, awards a larger sum, which sum may be taxed as a part of the taxable costs in the case.

Certainly it would not be contended that a party desiring to call an expert witness and to have the court "before whom such witness is to appear" fix his compensation, must give notice to his adversary so he can be heard and also make a showing of the character of the testimony such expert is to give. Nor does the statute contemplate notice and opportunity to be heard when the compensation is fixed after the expert witness has appeared. The same right prevails to tax, as a part of the costs, compensation permitted by the court to be paid to expert witnesses in good faith made to attend, and deemed material and necessary on an issue presented, though not sworn as witnesses by reason of the abandonment of the issue summoning them, as prevails in the case of other witnesses in good faith subpenaed and deemed material and necessary, and by turn of the case not sworn.

Society Proceedings

COMING MEETINGS

American Pathological Society, St. Louis, Dec. 27-29. Dr. Wade H. Brown, Rockefeller Institute for Medical Research, New York, Sec'y.
American Physiological Society, St. Louis, Dec. 27-29. Dr. Charles W. Greene, University of Missouri, Columbia, Mo., Secretary.
American Society of Biological Chemistry, St. Louis, Dec. 27-29. Dr. Victor C. Myers, New York Post-Graduate Medical School, New York, Secretary.
District of Columbia, Medical Society of, Washington, Jan. 2. Dr. C. B. Conklin, Medical Science Bldg., Washington, Secretary.
Isthmian Canal Zone, Medical Association of, Ancon, Dec. 21. Dr. J. J. Moore, Ancon Hospital, Ancon, Secretary.
Porto Rico, Medical Association of, San Juan, Dec. 14-16. Dr. Augustin R. Laugier, Box 1117, San Juan, Secretary.
Radiological Society of North America, Rochester, Minn., Dec. 3-7. Dr. M. J. Sandborn, Appleton, Wis., Secretary.
Society of American Bacteriologists, New Haven, Conn., Dec. 27-29. Dr. J. M. Sherman, Box 184, Washington, D. C., Secretary.
Southern Surgical Association, White Sulphur Springs, W. Va., Dec. 11-13. Dr. H. A. Royster, 423 Fayetteville Street, Raleigh, N. C., Secretary.
Western Surgical Association, Colorado Springs, Colo., Dec. 6-8. Dr. Warren A. Dennis, Hamm Bldg., St. Paul, Minn., Secretary.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

32: 125-276 (Sept.) 1923

Hemosiderin Content of Choroid Plexus. M. D. Flather, Swarthmore, Pa.—p. 125.
*Studies on Lymphocytes. H. E. Jordan and C. C. Speidel, Charlottesville, Va.—p. 155.
Blood Stream in Labyrinth of Ear of Dog and of Man. G. E. Shambaugh, Chicago.—p. 189.
*Cause of Twinning and Abnormal Development in Birds. O. Riddle, Cold Spring Harbor, N. Y.—p. 199.
Effects of Hypotonic Solutions on Cell Morphology of Choroid Plexuses and Central Nervous System. L. H. Weed, Baltimore.—p. 253.

Nature of Lymphocytes.—The experimental results reported by Jordan and Speidel confirm the conclusion already reached from a study of the normal spleen of the frog, namely that the lymphocytes are the precursors of erythrocytes, granulocytes and thrombocytes.

Cause of Twinning and Abnormalities.—The results of Riddle's studies support and extend the conception that both abnormalties and twins owe their origin to alterations of the developmental rate, or, perhaps, the metabolic rate, at various and unequally susceptible developmental stages. But whether a stage is "critical" or "indifferent" is, in part at least, a question of whether the stage is subjected to a retarding or to an accelerating agent. And the stage of development at which twins or multiple embryos actually arise is variable and includes stages extending from the unsegmented egg to gastrulation.

American Journal of Diseases of Children, Chicago

26: 291-390 (Oct.) 1923

Study of Acute Secondary Anemias in Infancy. W. P. Lucas and H. R. Hoobler, San Francisco.—p. 291.
*Inorganic Constituents of Human Milk with Particular Reference to Racial Variations. C. W. Burhans and D. N. Smith, Cleveland.—p. 303.
*Etiology and Treatment of Herpetic (Aphthous and Aphtho-Ulcerative) Stomatitis and Herpes Labialis. H. J. Gerstenberger, Cleveland.—p. 309.
*Blood Serum Content of Inorganic Phosphorus and Calcium in Pneumonia. H. J. Gerstenberger, C. W. Burhans, D. N. Smith and N. C. Wetzel, Cleveland.—p. 329.
*Comparison of Value of Milk and Oranges as Supplementary Lunch for Underweight Children. M. S. Chaney, Berkeley, Calif.—p. 337.
Effect of Complemental Feeding in New-Born Infants. H. A. Bachmann, Chicago.—p. 349.
*Calcium and Phosphorus Metabolism in Rickets. Ultraviolet Ray Therapy. W. J. Orr, L. E. Holt, Jr., L. Wilkins and F. H. Boone, Baltimore.—p. 362.
Atresia of Esophagus, with Tracheo-Esophageal Fistula. R. H. McClellan and T. J. Elterich, Pittsburgh.—p. 373.
*Case of Hemangio-Endothelioma of Ileum. M. E. Blahd, A. S. Mashke and H. T. Karsner, Cleveland.—p. 379.
Subdural Effusion and Internal Hydrocephalus. Report of Case, with Recovery. W. G. Penfield, New York.—p. 383.

Inorganic Constituents of Human Milk.—Fifty-four specimens of human milk have been analyzed for calcium, potassium and inorganic and total phosphorus and chlorids by Burhans and Smith. The averages of the results are practically the same as those reported by others who have used mixed or twenty-four hour samples. In comparing the white with the colored race, it was found that the calcium and the inorganic phosphorus were decreased in the milk from the latter race. The chlorids were considerably increased in the milk from the colored race.

Vitamin B Treatment of Herpes and Stomatitis.—Gerstenberger found that the administration of the water soluble B vitamin produces in herpetic stomatitis, aphthous stomatitis, herpes labialis, acute gingivitis, and ulcerative stomatitis a remarkably rapid improvement and recovery. It is suggested that the primary etiologic factor in these cases is metabolic and nutritional, and that any rôle that bacteria or similar agents may play in the future development of the local lesions is secondary. This metabolic disturbance may be due to a disproportion between the water soluble B supply of the body and the metabolic requirements of the patient for this vitamin at a given time. The constant and liberal use of canned tomato is advocated as an economic and dependable source of the water soluble B vitamin.

Blood Phosphorus and Calcium in Pneumonia.—In nine of ten cases of pneumonia in nonrachitic children investigated by Gerstenberger et al., the inorganic phosphorus of the serum was decidedly reduced during the febrile stage and rose to normal during convalescence. The calcium was slightly reduced in some of the cases and normal in others. In those cases in which it was reduced, it rose to normal during convalescence, except in one instance. These findings may offer an explanation of the rôle played by respiratory infections in the development of rickets.

Value of Milk and Orange as Supplementary Lunch.—The evidence presented by Chaney indicates that a midmorning lunch is of value in overcoming a condition of underweight in children. Oranges seem most efficacious in producing a gain in weight. This may be due to the vitamin content of the orange. Milk, while it produces a favorable increase in weight, is not the only food valuable for the midmorning lunch. Concentrated bottled orange juice appears to be of marked value in stimulating growth in the underweight child. It is not equal to fresh oranges.

Calcium and Phosphorus Metabolism in Rickets.—Metabolism studies have shown that infants with active rickets fail to retain calcium and phosphorus, although an adequate amount is present in the diet. Ultraviolet radiation causes large amounts of these elements to be retained in the body. Increased amounts of calcium and phosphorus are found in the urine after ultraviolet radiation, indicating an increased absorption from the intestine. It is argued by Orr et al. that defective absorption from the intestine in active rickets is the cause of the low concentrations of calcium and phosphorus in the serum, and is the ultimate cause of the defective calcification of the bones.

Hemangio-Endothelioma of Ileum.—The authors assert that theirs is the only case of the kind on record. Clinically, it was a case of intestinal obstruction in a child, aged 2 months. The child died. At the necropsy a tumor was discovered 30 cm. above the ileocecal valve. The tumor was obviously a capillary angioma and the blood content of most of the capillaries justifies the term capillary hemangioma.

American Journal of Medical Sciences, Philadelphia

166: 313-468 (Sept.) 1923

*Prognosis of Syphilis. J. A. Fordyce, New York.—p. 313.
*Hemolytopoietic System in Primary Anemias. Value of Splenectomy. E. B. Krumbhaar, Philadelphia.—p. 329.
*Cause of Bothriocephalus Anemia: Report of Case. R. L. Haden, Kansas City, Kan.—p. 338.
*Cerebrospinal Fluid Pressures: Concerning Initial Fall in Pressure Readings and Method of Obtaining Standard Reading. H. C. Solomon, H. M. Pfeiffer, Boston, and L. J. Thompson, St. Joseph, Mo.—p. 341.
*Studies of Cerebrospinal Fluid in Infants and Young Children in Conditions Other Than Acute Meningitis. S. McLean, New York.—p. 350.
Value of Cranial Decompressive Operations. A. O. Wilensky, New York.—p. 365.
Bacteriology of Acute Respiratory Disease During Interepidemic Period, Conditions Favoring Streptococcus Epidemics. J. C. Small, Philadelphia.—p. 384.
Roentgenologic Study of Tuberculosis of Lungs and Intrathoracic Glands in Infancy and Early Childhood. I. E. Liss, Scarsdale, N. Y.—p. 396.
*Carcinoma of Esophagus. P. P. Vinson, Rochester, Minn.—p. 402.
Intestinal Indigestion in Eczema and Psoriasis. F. L. Burnett, Boston.—p. 415.

Prognosis of Syphilis.—Summarizing his paper, Fordyce says, that the future of the syphilitic patient depends on the knowledge and training of the physician first consulted. When the diagnosis is made, the physician should impress the patient with the necessity for vigorous and thorough modern treatment and endeavor to make him appreciate the seriousness of the disease. The author suggests that those who treat syphilis should acquaint themselves more accurately with the possible toxic effects of the modern arsenicals. Has the hypertension which is at times met with after prolonged treatment any relation to the known toxic action of arsenic on the blood vessels? How long is arsenic stored in the liver

after the cessation of the usual courses of the drug? Can jaundice be prevented by a low protein diet during treatment? Is the elimination of arsenic hastened by the simultaneous use of the iodids? To what extent do various methods of giving arsphenamin develop arsenic-fast strains of the spirochetes and thus render further therapeutic attacks less efficient?

Hemolytopoietic System in Primary Anemias.—Bone marrow, spleen, liver, lymph nodes and reticulo-endothelial apparatus, Krumbhaar says, combine to regulate the formation and destruction of blood cells in what may be termed the "hemolytopoietic system." The methods for studying the functioning of this system ("hemolytopoietic balance") and the results of splenectomy in various diseases affecting this balance are presented.

Cause of Bothriocephalus Anemia.—A case of bothriocephalaus latus infestation is reported by Haden. The patient had probably harbored the parasite for six years without showing any symptoms. There was an anemia of sudden onset which quickly disappeared after the worm was expelled. When recovered, a large part of the worm was in a state of decomposition. These findings lend support to the idea expressed by Faust and Tallvuist that the anemia of bothriocephalus infestation is due to absorption of hemolytic substance from the dead worm.

Variation in Cerebrospinal Fluid Pressure Readings.—Solomon and his associates call attention to the fact that when lumbar puncture is performed in the usual manner, with the patient lying on his side and well flexed, the pressure recorded shortly after the needle is inserted is apt to be two, three or four times as great as that obtained after ten minutes. Usually, a drop in pressure occurs, being quite rapid in the first two or three minutes, then less rapid for several minutes. From six to ten minutes after the puncture is performed, a stable equilibrium is reached and the pressure reading remains fairly constant from then on, if the patient is quiet. This is not invariably true, but occurs in the majority of instances. Several factors play a part in the production of the early high reading and subsequent fall. The most important are the position of the patient and the amount of tension under which he holds himself. When rigidly flexed and fearful, the pressure is always high. Relaxation and extension avoids this original fluid hypertension. If after the pressure has fallen the patient again makes himself rigid and flexes himself vigorously, the pressure will again rise and will fall once more. The rate of drop will be accelerated if the patient relaxes and extends himself. In order to have a standard for estimating cerebrospinal fluid pressure, it is necessary to observe these rules. Readings taken on patients who are fearful or struggling, which is often the case subsequent to head trauma, may be 300 or 400 per cent., or even more, in excess of the pressure existing during periods of rest and quiet.

Cerebrospinal Fluid in Infants.—McLean analyzes the findings on examination of 316 spinal fluids of children. In acute respiratory infections, the cerebrospinal fluid is usually normal. In certain cases which had an uninterrupted convalescence without sequelae, the cerebrospinal fluid showed a pleocytosis with or without a positive globulin reaction during the acute stage of the disease. It is believed that in certain of these cases the diagnosis of serous meningitis might be entertained. In acute and chronic intestinal conditions in infancy and early childhood the great majority of cases have a normal cerebrospinal fluid while a minority show a fluid with a slightly increased cell count. In all cases of tetany the cerebrospinal fluid was essentially normal; a small number only (five of thirty-one) showed a fluid with an average cell count of twenty-one. Even repeated convulsions bear no relation to the number of cells in the cerebrospinal fluid. Of four "neuropathic children" all had normal cerebrospinal fluids. It would appear from the variable findings in four cases of cerebral thrombosis that there is nothing pathognomonic in the cerebrospinal fluid. The fluid in congenital syphilis is clear and colorless (except in certain cases of syphilitic meningitis), and usually under normal pressure. The cytology is variable. There is some evidence in this series of cases to demonstrate that there may be involvement of the central nervous system without pleocytosis. The intensity of the clinical manifestations is apparently not a criterion of the cytology. In eleven of twenty-one cases of brain tumor the count was not higher than 10 cells per cubic millimeter. In seven cases the count was more than 100. Of fifteen cases tested for globulin only six were positive.

Carcinoma of Esophagus.—Dysphagia, hiccup and regurgitation were the early symptoms noted in the 152 cases analyzed by Vinson. Most of the patients gave histories of bolting food, meals at irregular intervals, and many used alcohol to excess. Dental sepsis was almost always present. Twenty-one of the patients had a metastasis. A history of previous trauma to the esophagus was not elicited in any case, but in a recent case there had been a burn of the esophagus from lye in infancy. Although no form of treatment will prolong life for many months or give great relief from dysphagia, dilation of the carcinomatous stricture with olives, graduated sizes, has given the greatest palliation in the Mayo Clinic. No evidence has been obtained in the clinic to suggest that dilatation in any way hastens metastasis. The mortality in untreated cases is 100 per cent., and surgery offers little as a curative or palliative measure. Radium or roentgen-ray therapy is practically valueless.

American Review of Tuberculosis, Baltimore

8: 1-92 (Sept.) 1923

*Tuberculosis of Intestines. H. Schwatt and M. M. Steinbach, New York.—p. 9.
*Associated Diseases in Pulmonary Tuberculosis. H. C. Sweany, Chicago.—p. 40.
*Syndrome Simulating Pulmonary Tuberculosis. A. L. Hart and W. A. Gekler, Albuquerque, N. M.—p. 53.
*Study of Limitation of Chest Movement, Chest Thickness and Muscle Spasm in Diagnosis of Pulmonary Tuberculosis and Their Relation to Pleurisy. A. M. Hoffman, New York.—p. 59.
*Experimental Observations on Intratracheal and Intranasal Injections in Rabbits. H. A. Robin and H. C. Sweany, Chicago.—p. 66.
Antigenic Properties of Lipoids of Tubercle Bacillus. L. Dienes and E. W. Schoenheit, Asheville, N. C.—p. 73.
Demonstration of Increased Numbers of Tubercle Bacilli in Excretions of Tuberculous Patients. S. Serkowski, Warsaw, Poland.—p. 85.

Tuberculosis of Intestines.—Schwatt and Steinbach studied the pathologic findings in 199 consecutive necropsies to determine the true incidence of tuberculous disease of the intestines. The small intestine was involved somewhat more frequently (109 times) than the large intestine (ninety-eight times). The small intestine alone was the seat of disease thirty times and the large intestine alone nineteen times. The small and the large intestines were ulcerated in eighty cases. In over 75 per cent. of the cases the lesions involved more than one subdivision of the tract. Duodenal ulcers occurred in three cases, with involvement once of the small intestine alone and twice of the small and large intestines. Ulceration of the jejunum alone, or of the jejunum and large intestine without involvement of the ileum, is infrequent, one case of each in this series. The ileum was the most frequently involved segment of the intestine. It was the seat of ulcers 105 times. Ulceration of the ileum without the jejunum was more frequent (sixty-three times) than of ileum with jejunum (forty-two times). The ileum was also the most frequent site of sole ulceration. It occurred in twenty of the 129 cases in which the location of the lesions was noted in detail. Extensive involvement with advanced ulceration occurred in only two cases, one of which presented several perforations in the middle portion. Two cases showed tubercles only. Disease of the cecum was next in frequency to that of the ileum. It was free from disease in only nine of eighty cases involving the small and large intestine. In four of these the appendix was ulcerated. In fourteen cases the ileum and cecum, and in four cases the ileum, cecum and appendix, were involved. Tuberculous disease of the appendix occurred forty-four times with ulcerative lesions in forty cases. Sole ulceration of the appendix was noted in two cases. The colon was the seat of ulceration in sixty-three cases. The rectum was involved fifteen times, practically always with extensive and advanced disease of other segments of the tract. Completely healed intestinal ulcers were rarely found. In the majority of cases the intestinal disease ran a latent course, irrespective of the

extent or severity of the ulceration. The presence of the complication cannot therefore be excluded because of the absence of symptoms. There is no symptom or group of symptoms pathognomonic of tuberculous enteritis. The prognosis of tuberculous ulceration of the intestine in advanced phthisis is invariably bad, and the onset of this complication ushers in the termination of the case within a period of from three to six months.

Associated Diseases in Pulmonary Tuberculosis.—Sweany reports three cases of tuberculosis, in which the concomitant diseases caused the dominant symptoms and the tuberculosis played a minor rôle, far less so than surface appearances would indicate. These cases illustrate the importance and frequency of associated conditions in tuberculosis. The importance of recognizing the true condition early is paramount in successful treatment. Emphasis is laid on the point that sputum-negative cases should be diagnosed as tuberculosis with a great deal of care. On the contrary, the same care should be used in calling sputum-positive cases nothing but tuberculosis, for tuberculosis may cause few or all the symptoms. It is a problem, therefore, of correct evaluation of the symptoms of the various concomitant diseases, and on this evaluation to base the proper treatment.

Syndrome Simulating Pulmonary Tuberculosis.—In three cases referred to Hart and Gekler with a diagnosis of tuberculosis, the true condition has been found to be a combination of mitral stenosis and hyperthyroidism. The patients had fever, cough, hemoptysis, rapid pulse, loss of strength and loss of weight. In each case prolonged and accurate study was necessary for correct diagnosis.

Limitation of Chest Movement, Chest Thickness and Muscle Spasm as Signs of Pulmonary Tuberculosis.—Limitation of chest movement as an index of the side and amount of tuberculosis was found by Hoffman to be correct in 87.5 per cent. of 200 cases studied. Limitation of chest movement is most reliable as a diagnostic sign in far advanced cases (95.6 per cent.); next, in moderately advanced cases (90.8 per cent.) and least reliable in minimal cases (53 per cent.); a reliability which is in inverse ratio to the need of diagnostic aid in tuberculosis. Muscle spasm was found to be an accurate diagnostic aid in 57.5 per cent. of the cases, an incorrect aid in 10 per cent. and absent in 32.5 per cent. As with limitation of chest movement, muscle spasm seems to be least reliable in minimal cases. Diminution in thickness of the chest cannot be depended on to indicate the side of involvement in tuberculosis. In only 12.8 per cent. of 148 cases was there a definite correspondence between limitation of chest movement, diminution of pleural movement and basal pleurisy on the same side of the chest.

Result of Aspiration and Insufflation of Foreign Matter.—Robin and Sweany have been able to produce massive infiltration by the aspiration of carbon (india ink) without the aid of an anesthetic. The material aspirated in this manner tends to gravitate to the dependent portions of the lungs. Dry soot, when insufflated, produces a uniform anthracosis throughout both lungs. When soot is inhaled, it tends to encapsulate the tubercle, but apparently does not inhibit the growth of tubercle bacilli in the lungs. No fibrosis was observed in the lungs of any of the animals in a period as long as ten weeks. When light anesthesia is given to an animal lying head down, on a board tilted at 30 degrees, no carbon is aspirated, but in deep anesthesia much carbon is found in the lungs.

Johns Hopkins Hospital Bulletin, Baltimore

34: 277-320 (Sept.) 1923

*Studies of Living Human Blood Cells. F. R. Sabin, Baltimore.—p. 277.
*Pathologic Anatomy of Corpus Luteum. E. Novak and R. W. TeLinde, Baltimore.—p. 289.
*Lipemia Retinalis. W. S. McCann, Baltimore.—p. 302.
*Gas Exchange in Diseases of Thyroid Gland. J. T. King, Jr., Baltimore.—p. 304.
Determination of Corpuscular Volume from Relative Viscosities and Conductivities of Blood and Plasma or Serum. B. S. Neuhausen and Z. T. Wang, Baltimore.—p. 311.
Study of Growth of Certain Micro-organisms on Reinoculated Mediums. L. D. Felton, Baltimore.—p. 313.
*Rôle of Lymphatics in Absorption of Bile Pigment from Liver in Early Obstructive Jaundice. W. Bloom, Baltimore.—p. 316.

Origin and Life of Leukocytes.—Sabin presents evidence favoring the view that the large mononuclear cell is the young form of the monocytic strain and that the large lymphocyte is the young stage of the lymphocytes. He used a method that offers a chance to distinguish cells which have been stimulated from those which are degenerating, thus opening a new phase of the physiology of the white blood cells.

Pathologic Anatomy of Corpus Luteum.—The study made by Novak and TeLinde disclosed that the corpus luteum exhibits individual variations within physiologic limits. The most important of these are cystic distention of the corpus and an excessive degree of hemorrhage into the lumen during the stage of vascularization. The most important pathologic conditions affecting the corpus luteum are (1) abscess formation, (2) cyst, (3) hematoma and (4) neoplasm. The authors' findings throw doubt on the prevalent impression that corpus luteum cysts have a tendency to delay menstruation, and that they bring about a clinical syndrome easily mistaken for that of tubal pregnancy (amenorrhea followed by prolonged bleeding, together with a one-sided mass). Various authors have described ovarian tumors of supposedly lutein origin. Novak and TeLinde see no reason why such tmors should not occur, and they have observed growths, chiefly carcinomas, in which, morphologically, such an origin was suggested. The condition spoken of as multiple lutein cysts of the ovary, found with some cases of hydatidiform mole and chorio-epithelioma and sometimes erroneously designated as multiple corpus luteum cysts, is said to be due to a widespread lutein-like transformation of the theca cells in the atretic follicles, which are greatly increased in size and number.

Lipemia Retinalis in Diabetes.—The case of a patient who had diabetes mellitus with lipemia and lipemia retinalis is described by McCann. Evidence is given to show that the appearance of the retinal vessels is not dependent on the total fat content of the blood, for the lipemia persisted after the retina has resumed its normal appearance. Moreover, a case was observed in which the total blood fat percentage was 8.9 without any change in the appearance of the retina. Direct observation of the capillaries of the nailbed showed them to be normal in appearance. The shed blood was red. No change in the structure of small skin vessels was observed on histologic study. A tentative explanation of the white appearance of the retinal vessels is offered, namely, that the vessel may be surrounded by fat containing lymph or fat deposited in the adventitia of the vessels so that light is abnormally reflected or refracted, and that the appearance might depend on the physical state of the fats or lipoids of the blood rather than on their total quantity.

Gas Exchange in Diseases of Thyroid.—The average results of forty-eight one-hour observations made by King on patients with thyroid disease in the "basal" state showed that (*a*) the average carbon dioxid elevation is 0.8 per cent. less than the elevation of direct calories, and there is an average error in correlation with direct calories from hour to hour of ± 5.2 per cent.; (*b*) the average elevation of indirect calories is 2.1 per cent. above direct calories for those experiments. The error in the correlation of direct and indirect calorimetry from hour to hour is ± 5.8 per cent.; (*c*) the average elevation of oxygen is 6.5 per cent. above the direct calories, and the average error in correlation from hour to hour is ± 5.8 per cent. The average gaseous ratio is 0.791 in the first hour and 0.796 in the second hour. In the third hour (four observations) it is 0.767. In observations made on quiet patients the gaseous ratio fell in the second hour in eleven cases and rose in sixteen. In restless patients it fell in five cases and rose in six. Therefore, carbon dioxid elimination affords the best index to the heat production in thyroid disease, as judged by direct calorimeter experiments.

Rôle of Lymphatics in Absorption of Bile Pigment in Obstructive Jaundice.—The results of his experiments, Bloom says, must cause a revision of some of the ideas held at present on the processes involved in early obstructive jaundice. In the first place, it has been shown that, contrary to the prevailing idea, but in accord with the work of Jagič and

Ogata, the fine intercellular bile capillaries are not ruptured before there is an appreciable bilirubinemia consequent to the occlusion of the common duct. In the second place, the blood serum of dogs in the first day or two after the blocking of the ductus choledochus gives the indirect Van den Bergh reaction, and in so far renders doubtful the interpretation of the indirect test when actual tissue icterus is not present. On the other hand, after the sclerae are definitely icteric, the direct test is always given. It is felt, moreover, that the ready applicability of the Van den Bergh test to the serum and the lymph, coupled with the removal of the kidneys and the gallbladder, has made it possible to decide much more definitely than has been done in the past that the removal of bile pigment from the liver in the earliest stages of mechanical jaundice is entirely by the lymph stream and not by the blood stream.

Journal of Comparative Psychology, Baltimore

3: 241-326 (Aug.) 1923

Hearing in Rattlesnakes. F. B. Manning, Boston.—p. 241.
Study of Behavior of Birds by Multiple Choice Method. M. P. Sadovinkova, Moscow.—p. 249.
Factors Affecting Duration of Postrotation Nystagmus. J. Q. Holsopple, Baltimore.—p. 283.
Yerkes Multiple Choice Method with Human Adults. W. Brown and F. Whittell, Berkeley, Calif.—p. 305.
Effects of Surroundings Upon Mental Work as Measured by Yerkes Multiple Choice Method. H. Wong and W. Brown, Berkeley, Calif. —p. 319.

Journal of Medical Research, Boston

44: 1-119 (Sept.) 1923

Pathogenesis of Experimental Pneumonia in Rabbit. H. H. Permar, Pittsburgh.—p. 1.
Mononuclear Phagocytes in Experimental Pneumonia. H. H. Permar, Pittsburgh.—p. 27.
*Electrolyte Content of Red Blood Corpuscles. Findings in Chronic Anemia and Polycythemia. T. E. Buckman, W. R. Ohler and L. L. Doherty, Boston.—p. 51.
*Relative Fragility of Reticulated Red Corpuscles. T. E. Buckman and E. MacNaugher, Boston.—p. 61.
New Principle Applied to Staining of Fibrillary Neuroglia. P. Bailey, Boston.—p. 73.
Stimulating Effect of Photocytolytic Products of Protoplasm. C. E. Barr, Boston.—p. 79.
Influence of High Partial Pressures of Oxygen on Bacterial Cultures. H. T. Karsner, H. H. Brittingham and M. L. Richardson, Cleveland. —p. 83.

Electrolyte Content of Red Blood Cells.—Buckman, Ohler and Doherty report the results of the determination of the plasma volume and the specific conductivity of the serum and solution of laked red corpuscles from seven normal men, fourteen cases of anemia of long duration, and four cases of persistent erythrocytosis. The plasma volume is not necessarily influenced by the level of hemoglobin or by the number of red corpuscles. The mean value for the cases here reported was 50.4 c.c. per kilogram of body weight. The specific conductivity of the serum is not necessarily altered by the level of hemoglobin or by the concentration of corpuscles and tends to approach a constant value of about 150×10^{-4}. In the series of cases reported, the specific conductivity of a 50 per cent. clear solution of the products of laked red corpuscles was proportional to the percentage volume of the red cells.

Fragility of Reticulated Red Blood Cells.—Evidence is presented by Buckman and MacNaugher to show that the reticulated cells from cases of pernicious anemia are less resistant to hypotonic salt solution than are the reticulated cells from cases of anemia due to hemorrhage. Defibrinated blood from normal subjects, from cases of anemia due to hemorrhage and cases of pernicious anemia in a stage of remission, with or without a marked increase in percentage of reticulated cells, does not undergo autolysis and does not show a diminution in the percentage of reticulated cells when incubated for twelve hours at 37 C. Defibrinated blood obtained from cases of pernicious anemia in a state of relapse showing a high percentage of reticulated cells undergoes autolysis and shows a marked diminution in the percentage of reticulated cells when incubated at 37 C. for twelve hours. It is suggested that the reticulated cells may contain proteolytic enzymes which would be liberated on destruction of these cells and thus effect autolysis of the serum.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

22: 59-138 (Sept.) 1923

*Standardization of Ergot Preparations. W. A. Broom and A. J. Clark, London.—p. 59.
*Erythropoietic Action of Red Bone Marrow and Splenic Extracts. C. D. Leake and E. W. Leake, Madison, Wis.—p. 75.
*Histologic Detection of Iodids. E. J. Stieglitz, Baltimore.—p. 89.
*Drugs and Basal Metabolism. W. M. Boothby and L. G. Rowntree, Rochester, Minn.—p. 99.
Leukocytic Reactions to Red Bone Marrow and Spleen Extracts. C. D. Leake, Madison, Wis.—p. 109.
Behavior of Rats After Injections of Bile Salts, Urea, Creatin and Creatinin. D. I. Macht, Baltimore.—p. 117.
Absorption of Drugs Through Eye, Ear, Teeth and Esophagus. D. I. Macht, Baltimore.—p. 123.

Standardization of Ergot Preparations.—The action of the ergot alkaloids in paralyzing the motor sympathetic endings in the isolated uterus of the rabbit, according to Broom and Clark, can be made the basis of a convenient method for standardizing ergot preparations. The method measures only the alkaloidal content of ergot and is not affected by the presence of amins such as histamin and tyramin. The results obtained by this method agree fairly well with the results obtained by the cockscomb method, and with the method based on the reversal of the epinephrin effect on the cat's blood pressure. Quite different results are obtained with the isolated uterus of the guinea-pig, and the uterus of the cat in situ. These methods measure very largely the amin content of ergot preparations. Liquid extract of ergot prepared strictly in accordance with the directions of the British pharmacopeia is said to be almost completely devoid of ergot alkaloids.

Erythropoietic Action of Red Bone Marrow and Spleen Extracts.—It is concluded by Leake and Leake that splenic and red bone marrow extracts are more powerful erythropoietic agents in combination than separately, and it is indicated that they act first, by increasing the rate of production or delivery in existing erythrogenic centers; and, second by causing an extension of functioning red marrow.

Histologic Detection of Iodids.—It is shown by Stieglitz that iodid ions may be detected histologically in tissue cells in very minute amounts by a relatively simple technic. The iodids, thus identified in the tissues, have a very characteristic distribution. They occur almost exclusively in parenchymatous secreting cells.

Effect of Epinephrin on Basal Metabolism.—Epinephrin was the only drug studied by Boothby and Rowntree which produced, in the doses used, a definite or consistent alteration in the level of the basal metabolic rate of an order exceeding 10 per cent. within two hours of administration. Epinephrin has a definite and intensive calorigenic action with its maximum effect a few minutes after administration. Insulin does not apparently possess a direct calorigenic action, although it causes an increase in the basal metabolic rate in the fasting individual if the blood sugar falls to a critical level associated with symptoms of hypoglycemia. In the clinical estimation of the basal metabolic rate neither epinephrin nor insulin should be given within several hours preceding the test. The administration of iodids does not affect the metabolism of a normal person, but may convert a case of adenomatous goiter without hyperthyroidism into one with hyperthyrodism, and the increased metabolism, when so produced, represents the intensity of the new syndrome.

Maine Medical Association Journal, Portland

14: 27-48 (Sept.) 1923

Unilateral Hydronephrosis. C. H. Jameson.—p. 27.
Who Should Practice Medicine in Maine. C. P. Barnes, Houlton.—p. 34.

New York Medical Journal and Medical Record

118: 397-468 (Oct. 3) 1923

Summary of Symptoms of Lethargic Encephalitis. F. X. Dercum, Philadelphia.—p. 397.
Catalepsy in Epidemic Encephalitis. J. H. Musser, Jr., and A. E. Bennett, Philadelphia.—p. 399.
*Incidence of Acute Epidemic Encephalitis in Bellevue Hospital in January, February and March, 1923. R. S. Crispell, New York.—p. 402.
Psycho-Analysis. J. Smith, New York.—p. 404.

Aseptic Meningitis in Combating the Dementia Praecox Problem. R. S. Carroll, Asheville, N. C.—p. 407.
Myotonia. Case of Paramyotonia, Limited to Orbicularis Palpebrarum. A. Gordon, Philadelphia.—p. 412.
Psychology as Factor in Practice of Medicine. H. W. Potter, Thiells, N. Y.—p. 414.
*Physiologic Diagnostic Dream. E. G. Mitchell, Boston.—p. 416.
Case of Optic Atrophy in Multiple Sclerosis. A. S. Maclaire, New York.—p. 418.
Atypical Amyotrophic Lateral Sclerosis. E. D. Friedman, New York. p. 422.
Arteriosclerosis of Nervous System. G. E. Price, Spokane, Wash.—p. 425.
Lumbar Puncture in Neurosyphilis. A. B. Cannon, New York.—p. 430.
Visceral Neurology in Relation to Clinical Medicine. J. H. Leiner, New York.—p. 434.
*Roentgen-Ray Signs of Increased Intracranial Pressure. L. J. Friedman, New York.—p. 437.
Tumors of Cerebellum. P. K. Menzies, Syracuse, N. Y.—p. 441.
Confused States Following Infections. I. J. Sands, Brooklyn.—p. 444.
Case of Chorea. R. Sheehan, New York.—p. 446.

Analysis of Cases of Acute Epidemic Encephalitis.—Forty-two cases were reviewed by Crispell. In only five cases was it noted that the patient had a preceding attack of influenza or other respiratory disease. In twenty-six cases the onset was gradual while in nine it was sudden. In the majority of cases the onset was attended with neuralgic pains, which often lasted throughout the disease and into convalescence. The most frequent sites of these pains were the back of the head, the neck and down the arms. The most constant symptoms were those referred to disturbance of movements of the eyeballs. Sluggish pupils were present in ten cases. Insomnia, especially at the beginning of but often lasting throughout the disease, was a complaint of ten or more of the patients. Delirium or clouded consciousness was present in ten cases. Except for myoclonic twitchings, there was little mention of adventitious movements. Dizziness was complained of in a few cases. Autonomic symptoms were not prominent. No case of the forty-two showed any pryamidal signs, with the possible exception that in several the abdominal reflexes seemed to be absent. In three cases a slight suggestion of rigidity of the neck was noted; in only one case was the neck described definitely as rigid. As diplopia was the most common subjective symptom, myoclonic twitchings constituted the most constant objective sign. They were definitely noted in twenty-three cases, most commonly in the abdomen, but also in the extremities. In several cases myoclonic twitchings were the outstanding factor and the factor on which the diagnosis of epidemic encephalitis hinged. The leukocyte count averaged between 11,000 and 12,000. Three cases having a count of 20,000 or more proved fatal. A slight pleocytosis, averaging from twenty to thirty cells, was the only constant spinal fluid finding. Twelve of the forty-two cases were fatal.

Physiologic Diagnostic Dream.—In the physiologic diagnostic dream, so termed by Mitchell, sex symbolism is a secondary matter. The beginning lesions are giving rise to pains or sensations so slight that they remain unnoticed during the distractions of the day. In sleep the stimulus produces a dream whose content corresponds absolutely to the type of sensation and to the location of the physical trouble. A characteristic of these dreams seems to be that they are repeated. Four cases in point are cited.

Roentgen-Ray Signs of Increased Intracranial Pressure.—In the examination of about 3,000 cases, of which 750 were examined for evidences of injury or pathology, evidences of intracranial pressure were observed by Friedman in about 75 per cent. Roentgenologically, intracranial pressure can be divided into acute, subacute and chronic. The acute type can readily be interpreted by observing a peculiar mottling of the skull field, better described as areas of increased illumination with intervening spaces of the normal brain shadow. This appearance justifies the diagnosis of a diffuse mild form of edema of the brain. This edema may arise not only from injury, but also from laceration of the brain which occurs in concussion. In every case in which lumbar puncture was performed shortly after an injury, bloody spinal fluid was found even though there was no evidence of a fracture. The subacute type of intracranial pressure is observed at a more remote period after an accident and is accompanied by certain subjective symptoms such as headache and vertigo. Roentgenologically, the presence of subacute intracranial pressure is also recognized by the presence of mottling, although not as extensive as that seen in the acute form. The roentgenologic characteristics of chronic intracranial pressure are evidences of crescentic osteoporotic areas of the inner table of the skull which may be general or confined to the frontal, parietal or occipital areas.

Northwest Medicine, Seattle

22: 301-336 (Sept.) 1923

*Experimental Prophylactic Inoculation Against Rocky Mountain Spotted Fever. H. Noguchi, New York.—p. 301.
Maintenance of Virus of Rocky Mountain Spotted Fever in Nature with Particular Reference to Conditions in Bitter Root Valley. R. R. Parker, Hamilton, Mont.—p. 303.
Clinical Importance of Vital Capacity of Lungs. F. W. Peabody, Boston.—p. 307. (To be concluded.)
*Innervation of Lung. O. Larsell, Portland.—p. 311.
Influenza and Influenzal Pneumonia. C. Frothingham, Boston.—p. 316.
Acute Empyema. J. C. Shields, Butte, Mont.—p. 320.
Treatment of Chronic Suppuration of Middle Ear by Ionization of Zinc. M. C. Fox, Portland.—p. 323.
Structure and Function of Acoustic Labyrinth, Etc. G. E. Shambaugh, Chicago.—p. 326.

Prophylactic Inoculation Against Rocky Mountain Spotted Fever.—The fact that it is possible at all to produce a certain degree of immunity against Rocky Mountain spotted fever by means of heated serovaccine, Noguchi asserts is of practical significance, and this mild mode of immunization, with killed virus as one of the components of the vaccine, is worth trying in human beings, since it involves no risk and yet is likely to produce a degree of immunity which, if not enough to prevent infection altogether, will, perhaps, be sufficient to modify the course of the disease to a less severe type.

Innervation of Lung.—Larsell follows only the nerve trunks and their branches from the point of entrance into the lung, at the hilum, to their various terminations, motor and sensory, with some attention to the intrapulmonary ganglions and the relations of the plexuses, with the hope of throwing light from an anatomic standpoint on certain obscure conditions and relations within the lung.

Philippine Journal of Science, Manila

23: 237-305 (Sept.) 1923

Diagnosis of Hainan Plants, II. E. D. Merrill.—p. 237.
Composition of Pili-Nut Oil. A. P. West and S. Balce.—p. 269.
Effect of Composition on Complete Hydrogenation of Some Philippine Oils with Nickel Catalyst. A. P. West and L. Gonzaga.—p. 277.
Some New Malayan Carabidae, Especially Philippine. K. M. Heller, Dresden, Ger.—p. 295.

South Carolina Medical Association Journal, Greenville

19: 579-606 (Sept.) 1923

Problem of Cardiovascular-Renal Disease. R. Wilson, Charleston.—p. 580.
Significance of Bladder Symptoms. M. Weinberg, Sumter.—p. 586.
Pharmacology of Certain Endocrine Glands. W. H. Zeigler, Charleston.—p. 590.

Tennessee State Medical Association Journal, Nashville

16: 157-196 (Sept.) 1923

Our Responsibility as Regards Better Vision for School Children of Tennessee. L. M. Scott, Jellico.—p. 157.
Peptic Ulcer. R. L. Sanders and C. C. King, Memphis.—p. 160.
Deductions from Review of One Thousand Roentgen-Ray Examinations of Gastro-Intestinal Tract. S. W. Coley, Memphis.—p. 165.
Version. R. O. Tucker, Nashville.—p. 170.
Country Obstetrics. K. S. Howlett, Franklin.—p. 176.
Improvement of Hearing. E. D. Watkins, Memphis.—p. 181.
Fibroma of Ovary. Report of Two Cases. F. W. Smythe, Memphis.—p. 184.

Wisconsin Medical Journal, Milwaukee

22: 151-192 (Sept.) 1923

Diagnosis and Treatment of Brain Tumors. W. E. Dandy, Baltimore.—p. 151.
Ectopic Gestation. Report of Cases. T. W. Nuzum, Janesville.—p. 154.
Surgical Aspects of Uterine Malpositions. J. A. Pettit, Portland, Ore.—p. 157.
Cystography in Diagnosis of Urologic Conditions. I. R. Sisk, Madison.—p. 160.
Barraquer Method of Cataract Extraction. V. A. Chapman, Milwaukee.—p. 164.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Tropical Medicine and Parasitology, Liverpool

17: 304-441 (Oct. 13) 1923

Treatment of Malaria. XXXII. J. W. W. Stephens.—p. 304.
Australian Cestodes. P. A. Maplestone and T. Southwell.—p. 317.
Ophiotaenia Punica (Cholodovski, 1908) La Rue, 1911. T. Southwell and S. Adler.—p. 333.
Pyrrhocorid Bug (Dysdercus superstitiosus, F.) Capable of Biting Man. B. Blacklock.—p. 337.
Typhus Fever in Greek Refugees. P. Hehir.—p. 347.
*Value of Sachs-Geeorgi Reaction in Serologic Diagnosis of Syphilis. G. Stuart.—p. 359.
Aedinus Amazonensis, Lutz. A. M. Evans.—p. 377.
*Treatment of Amebic Dysentery. R. M. Gordon.—p. 381.
*Relapsing Fever in Gold Coast. P. S. Selwyn-Clarke and A. Ingram.—p. 389.
*Carbon Tetrachlorid in Filiariasis. S. Adler.—p. 427.
Yellow Fever in Gold Coast. Its Endemic and Epidemic Character. R. O. White.—p. 431.

Value of Sachs-Georgi Test in Diagnosis of Syphilis.—It is Stuart's belief that the Sachs-Georgi test cannot take the place of the Wassermann test, and should not be employed alone unless it is impossible to obtain the reagents necessary for the performance of the Wassermann test. The Wassermann reaction remains positive longer than the Sachs-Georgi reaction. A negative Sachs-Georgi reaction, then, in treated cases would not form a reliable index as to the cure of the patient. The Sachs-Georgi reaction remains negative in certain definitely established cases of syphilis, and for no apparent reason. It is justifiable, therefore, perhaps to conclude that a negative Sachs-Georgi reaction is of little or no value.

Treatment of Amebic Dysentery.—One hundred and fifty cases of amebic dysentery were given various forms of treatment and subsequently kept under observation for from one to six months or longer. Of these 150 cases, 101 (66 per cent.) relapsed. Among all the cases treated only six patients (4 per cent.) were observed to be passing *E. histolytica* cysts after treatment. Sixteen were given emetin periodid, 6 grains daily. Eight of these (50 per cent.) relapsed within one month. Giving this drug in gelatin capsules was found to be unsatisfactory as they frequently passed through the intestine without dissolving. When mixed with a little milk and given by the mouth the periodid did not produce vomiting. Owing to the inequality of the observation periods no attempt was made to compare the value of any two forms of treatment.

Spironema Causes Relapsing Fever.—This first recorded outbreak of relapsing fever in British West Africa was due to a spironema conveyed by lice. As regards inoculation experiments made by Clarke and his associates, monkeys and black and white rats became infected with the strain, but did not have a relapse; guinea-pigs and rabbits were refractory, while the pouched rat became infected and had a relapse. The vectors of the organism in this epidemic and inoculation experiments suggest that the parasite is not the *Sp. duttoni*, but corresponds more closely to *Sp. recurrentis (vel obermeieri)*, or a related strain.

Carbon Tetrachlorid in Filariasis.—After performing preliminary experiments with carbon tetrachlorid administered orally, it was decided to try the effect of the drug administered intravenously and intramuscularly to animals. Adler gave the drug to four adult patients each with a slight infection of *Filaria bancrofti*. None showed any marked diminution of the microfilaria in the blood after the treatment, but in view of the comparative safety with which the drug can be administered, both intravenously and intramuscularly, Adler suggests that carbon tetrachlorid be tried in cases of *Loa loa* infection.

British Journal of Anaesthesia, Manchester

1: 1-54 (July) 1923

Early Anesthesia. Sir D. Power.—p. 4.
Painless Childbirth by Synergistic Methods. E. P. Donovan and J. T. Gwathmey.—p. 8.
Sacral or Epidural Analgesia. J. Blomfield.—p. 22.
New Anesthetics: Ethylene; Acetylene. C. L. Hewer.—p. 27.

British Journal of Ophthalmology, London

7: 401-448 (Sept.) 1923

Congenital Miosis or Pinhole Pupils Owing to Developmental Faults of Dilator Muscle. S. Holth and O. Berner.—p. 401.
Binocular Choroidal Tuberculosis with Detachment of Retina in Two Kittens. J. B. Lawford and H. Neame.—p. 419.
Tournay's Reaction (Anisocoria). P. G. Doyne.—p. 420.
Wernicke's Pupillary Reaction. J. D. Cummins.—p. 421.

British Journal of Tuberculosis, London

17: 155-194 (Oct.) 1923

Swiss Health Stations for Consumptives and Other Tuberculous Subjects. T. N. Kelynack.—p. 155.
Psychophysiologic Aspects of Montana (Switzerland) Climate in Winter. L. Hill.—p. 175.
Montana. Climatic and Therapeutic Considerations. B. Hudson.—p. 176.
Visit to Danish Sanatorium. J. Johnstone.—p. 179.

British Medical Journal, London

2: 591-638 (Oct. 6) 1923

Problem of Success for Medical Women. H. Rolleston.—p. 591.
*Regulating and Reflex Process. P. T. Herring.—p. 594.
*Causes of Intestinal Obstruction. J. W. Thomson.—p. 597.
Case of Angiochorioma. O. J. Reid and A. N. Kingsbury.—p. 598.
*Hemophilia in Female. M. Warde.—p. 599.
*Insulin Treatment: Suggestion for Optical Method. W. F. Lloyd.—p. 600.
Use and Abuse of Obstetric Forceps. C. Berkeley.—p. 600.
Id. J. Fairbairn.—p. 604.
Unilateral Gynecomastia. A. A. Pomfret.—p. 609.
Hemorrhagic Disease of New-Born Treated Successfully by Injections of Father's Blood. F. W. Robertson.—p. 609.

Regulating and Reflex Process.—Herring contends that we must look for the first signs of ill health in the nervous regulating processes of the body. They are the basis of the vital activities and maintain the life of the organism as a unit. Disturbance of the vital processes is the first sign of ill health, and their failure is the ultimate cause of death.

Causes of Intestinal Obstruction.—Among the causes of intestinal obstruction enumerated by Thomson are: volvulus; duodenal hernia; gallstones; uterine fibroid and inguinal or femoral hernia.

Hemophilia Transmission.—According to family tradition the disease in this case was traceable through the paternal grandmother from her father to her son, the patient's father. The latter exhibited a great tendency to bruising and had epistaxis about every two weeks. Trivial injuries frequently caused swelling of the joints, one or other of which was almost constantly affected. Death is thought to have been due to hemorrhage connected with fracture of the leg, which occurred shortly before, "fragments of bone working out with much bleeding."

Determination of Sugar in Solutions.—Lloyd has made determinations of the amount of glucose in solutions by measuring the index of refraction of the solution. The instrument used depends on the measurement of the critical angle. The instrument is simple and only one or two drops of the liquid are required.

639-684 (Oct. 13) 1923

Some Changes in Obstetric Practice Since Foundation of Medical Society of London. H. R. Spencer.—p. 639.
Regulating and Reflex Process. Nerve Impulse; Importance of Receptors; Production of Pain. P. T. Herring.—p. 643.
*Pellagra in Children. R. Hutchison and D. Patterson.—p. 646.
Case of Fracture of Skull Causing Death (Cerebral Necrosis) after Eleven Years. S. Smith and M. Emara.—p. 647.
Roentgen-Ray Examination of Urinary Tract. R. W. A. Salmond.—p. 648.
Ophthalmology in Relation to Navy, Army and Air Force. D. Munro and C. Clements.—p. 654.
Vision in Gun-Layers. W. K. D. Breton.—p. 658.
Naval Lighting. R. J. E. Hanson.—p. 658.
*Pneumothorax. A. S. Hendry.—p. 659.

Pellagra in England.—In both the cases reported by Hutchison and Paterson the rash and affection of the nervous system appear to be typical. Apart from the fact that at some period prior to the onset of symptoms both children were fed large quantities of "corn-flour," there is nothing in the history which would fit in with the various theories of the causation of pellagra. In one case the diet seemed to have contained a sufficiency of protein of high biologic value. These children had both resided all their lives in England.

Traumatic Pneumothorax.—Hendrie's patient had pneumonia in 1914, followed by whooping cough. While playing football, Nov. 17, 1922, an opponent knelt on his chest. He felt a very slight pain, but no dyspnea. The next morning he complained of slight pain in the left side of the chest over the precordium. There was no evidence of fractured rib. In two days he felt perfectly well. He played football again, November 24, and, after the game complained of slight shortness of breath. Over the right lower lobe posteriorly there was an area of high pitched distant bronchial breathing. The roentgeon ray showed a moderate sized pneumothorax at the outer and lower side of the right pleural cavity.

Glasgow Medical Journal

18: 161-208 (Oct.) 1923

Tuberculin. J. Crocket.—p. 161.
*Results of Clinical Laboratory Tests in Diagnosis of Various Types of Jaundice. A. S. Barr.—p. 174.
Local Medical Diathermy. A. B. MacLean.—p. 187.

Value of Laboratory Tests in Diagnosis of Jaundice.—Barr discusses the urobilin test, the van den Bergh test, the Widal hemoclasic crisis test and the levulose tolerance test. He believes that it is a scientific duty to accept these tests with caution—if not, indeed, with suspicion—but at the same time to keep an open mind, and to use every possible opportunity to add to the list of experiences from which alone the value of any test can ultimately be judged.

Indian Medical Gazette, Calcutta

58: 401-452 (Sept.) 1923

Dengue Sand Fly Fever Problem. J. W. D. Megaw.—p. 401.
*Treatment of Malaria by Quinin in Combination with Magnesium Sulphate and Alkali. J. A. Sinton.—p. 406.
Failure of "Bayer 205" in Treatment of Kala-Azar. L. E. Mapier.—p. 415.
Outbreak of Diphtheria at Bishop Cotton's School, Simla. E. S. Phipson.—p. 417.
Schick Test and Immunization by Toxin-Antitoxin in Assam. E. C. R. Fox, E. J. C. McDonald and T. C. McC. Young.—p. 419.
Dissemination of Human Helminthic Infections by Animals in India. G. C. Ramsay.—p. 422.
Dietary of Scholars. J. L. Das.—p. 424.
*Effect of Intravenous Injections of Antimony Tartrate on Development of Vaccinia Virus. J. Cunningham and J. A. Cruickshank.—p. 427.
Occurrence of Balantidium Coli in Feces of Indian. J. A. Sinton.—p. 432.
Cancrum Oris Treated by Excision and Subsequent Tube Grafting. L. W. Hefferman.—p. 434.

Quinin-Magnesium Sulphate Treatment of Malaria.—On the basis that the malarial paroxysm is of the nature of an "anaphylactoid" phenomenon, Sinton developed what might be termed a combined quinin-alkali treatment, thus assisting the natural defenses of the body to combat any tendency to "acidosis" or diminished alkali reserve, making the reaction of the body fluid more favorable to the optimum parasiticidal action of the quinin and at the time helping to alleviate the symptoms of cinchonism. The alkaline mixture, per dose, consists of sodium bicarbonate, 60 grains, and sodium citrate, 40 grains in 1 ounce of water. The quinin mixture consists of quinin sulphate, 10 grains; citric acid, 30 grains, magnesium sulphate, 60 grains in 1 ounce of water. One dose of each mixture, from fifteen to thirty minutes apart, is given thrice daily for four or five days and twice on each of two successive days; 180 grains of quinin is given in seven days. Very favorable reports are made from the use of this treatment.

Effect of Antimony on Development of Vaccinia Virus.—The results of experiments reported by Cunningham and Cruickshank appear to show that the intravenous injection of potassium antimony tartrate has no effect on the development of vaccinia in the calf. It is, therefore, more than likely that it has little or no effect on the development of the virus of variola in the human subject.

Irish Journal of Medical Science, Dublin

291-338 (Oct.) 1923

*Transient Unilateral Hyperhidrosis Localis Immediately Following Eating of Highly Acid Food Stuffs. R. Hall.—p. 291.
Interpretations of Sulci on Certain Bones. A. K. Henry.—p. 295.

Transient Unilateral Hyperhidrosis Following Ingestion of Acid Foods.—Hall relates the case of a man who would have a reddish blush over his right cheek bone about midway between his eye and ear immediately after eating highly acid foodstuffs such as rhubarb, stewed gooseberries, baking apples or vinegar (either hot or cold), and this was quickly followed by small beads of sweat over the blush spot, which then gradually resumed its normal appearance. Nothing was found in the general condition to account for this.

Journal of General Physiology, London

6: 1-129 (Sept.) 1923

*Effect of Radioactive Radiations and Roentgen Rays on Enzymes. II. Effect of Radiations from Radium Emanation on Pepsin in Solution. R. G. Hussey and W. R. Thompson, New York.—p. 1.
*Id. III. Unit of Measure of Activity for Radium Emanation. R. G. Hussey and W. R. Thompson, New York.—p. 7.
Minimum Concentration of Oxygen for Luminescence by Luminous Bacteria. E. N. Harvey and T. F. Morrison, Princeton, N. J.—p. 13.
Rate of Growth of Dairy Cow. III. Relation Between Growth in Weight and Increase of Milk Secretion with Age. S. Brody, A. C. Ragsdale and C. W. Turner, Columbia, Mo.—p. 21.
Id. IV. Growth and Senescence as Measured by Rise and Fall of Milk Secretion with Age. S. Brody, A. C. Ragsdale and C. W. Turner, Columbia, Mo.—p. 31.
Rate of Senescence of Domestic Fowl as Measured by Decline in Egg Production with Age. S. Brody, E. W. Henderson and H. L. Kempster, Columbia, Mo.—p. 41.
Absorption of Ions by Plants, Including Observations on Effect of Light. D. R. Hoagland and A. R. Davis, Berkeley, Calif.—p. 47.
Changes in Stability and Potential of Cell Suspensions. I. Stability and Potential of Bacterium Coli. A. H. Eggerth, Brooklyn.—p. 63.
Function of Brain in Locomotion of Polyclad Worm, Yungia Aurantiaca. A. R. Moore, Naples, Italy.—p. 73.
Studies on Toxicity. E. I. Fulmer and R. E. Buchanan, Ames, Iowa.—p. 77.
Membrane Potentials and Colloidal Behavior. A. V. Hill, Manchester, England.—p. 91.
Id. Reply to Note by Professor A. V. Hill. D. I. Hitchcock, New York.—p. 93.
Combination of Deaminized Gelatin with Hydrochloric Acid. D. I. Hitchcock, New York.—p. 95.
Location of Forces Which Determine Electrical Double Layer Between Collodion Particles and Water. J. Loeb, New York.—p. 105.

Unit of Measurement of Radium Emanation.—Hussey and Thompson introduce a unit to express activity or power of a given preparation of radium emanation. They have named this unit the curie-power and defined it as the activity of 1 curie of radium emanation. They suggest the introduction of this unit in order that more comprehensive statements of experimental observation may be made.

Journal of Laryngology and Otology, Edinburgh

38: 513-564 (Oct.) 1923

Treatment of Large Foreign Bodies Impacted in Gullet. D. R. Paterson.—p. 513.
Case in Which Endoscopic Search for Fish Bone in Gullet was Followed by Cellulitis in Neck, and Abscess in Chest Wall. N. Maclay.—p. 518.
Diseases of Thyroid in Their Relation to Laryngology. F. H. Diggle.—p. 522.
Case of Hemangioma of Right Vocal Cord. J. A. Jones.—p. 528.

Journal of State Medicine, London

31: 401-450 (Sept.) 1923

*Diet Deficiencies in Relation to Public Health. H. P. Newsholme.—p. 401.
*Mineral Constituents of Milk. W. Godden.—p. 410.
Smallpox, Jenner and Vaccination. C. K. Millard.—p. 416.
Cancer. Its Prevention. J. Brown.—p. 427.
Medical Inspection of School Children in Natal. C. G. K. Sharp.—p. 437.

Deficiency in Diet and Public Health.—In general, Newsholme says, all is likely to be well if the modern diet is supplemented by a daily supply of foods rich in vitamins, in mineral matter, and in protein of good food value. The best foods for the purpose are milk and milk products, eggs, green vegetables and fruit. With a sufficiency of these there is no reason why the rest of the diet should not consist of the cheaper foods which bulk so largely at present. The great need at the moment is that by every possible means people should be educated to a knowledge of the defects in the national diet, and of the simple precautions which can counteract its evil effects. A good deal is already being done, through the education of school children in elementary hygiene, though cookery classes, through the work of health visitors and of infant welfare centers, and of voluntary

agencies. There is, however, scope for a vast expansion of activity in these directions, with results which will be far greater than the labor involved.

Mineral Constituents of Milk.—Godden stresses the fact that the mineral constituents of milk are of the highest importance to the growing animal. Deficiency of one or more of these constituents may result in arrested growth, rickets, or anemia. When artificial feeding is necessary, care should be taken to ensure an adequate supply of a properly balanced mineral mixture in the food, using the average composition of the ash of human milk as a guide. Attention should be paid to the ratio between the percentage of ash and of the organic constituents of such artificial foodstuffs. An adequate supply of fat has a marked influence on the assimilation of calcium.

Journal of Tropical Medicine and Hygiene

26: 297-312 (Oct. 1) 1923

Malaria in Transvaal. H. A. Spencer.—p. 297.

Lancet, London

2: 687-816 (Oct. 6) 1923

Founding of the Lancet.—p. 687.
Problem of Success for Medical Women. H. Rolleston.—p. 765.
Proper Utilization of Senses. H. J. Waring.—p. 767.
"Practice." E. B. Turner.—p. 769.
Team-Work in Nature. S. Hastings.—p. 774.
*Early Experiences with Insulin in Treatment of Diabetes Mellitus. N. Burgess, J. M. H. Campbell, A. A. Osman, W. W. Payne and E. P. Poulton.—p. 777.
*Silhouette Radiogram. A. P. Bertwistle.—p. 783.
*Results of Schick Method. B. A. Peters.—p. 784.
Pregnancy Complicating Fibroids in Primipara Aged Forty-Six. A. L. McIlroy.—p. 784.
Jaw-Winking. J. A. Wilson.—p. 785.
*Diphtheria of Big Toe. E. Emrys-Roberts.—p. 785.

Action of Insulin.—The treatment over a period of 108 days of a severe case of diabetes, requiring 75 units of insulin a day, is described by Burgess and others. Figures are given illustrating the effect of insulin in diminishing ketosis in diabetes and diabetic coma. Insulin had no effect when given by mouth mixed with sodium bicarbonate or by rectum. When mixed with gum and injected subcutaneously, the absorption was a little delayed and a larger dose was tolerated. Evidence, arising out of the administration of a very large dose of insulin, showed that it causes storage of carbohydrate in some form. When the depots are full, insulin does not have such a big effect in lowering the amount of the blood sugar. The marked rise in respiratory quotient with insulin is explained on Dale's hypothesis that insulin also caused carbohydrate to be burned in preference to other foodstuffs, and the fall in oxygen intake is explained by the low specific dynamic action of carbohydrate.

Silhouette Roentgenograms.—To make silhouette roentgenograms, Bertwistle scratches the negative with a pin, carefully following the skin outline. Then he makes a print and blocks out the background with India ink. Most negatives show a well defined skin outline. The actual result is a silhouette roentgenogram, a combination which has the properties of a roentgen-ray plate and a clean cut silhouette, displaying the deformity or otherwise of the soft parts. The advantages are said to be: (1) a more striking clinical picture, often rendering a photograph unnecessary; (2) the ease with which it may be obtained; (3) the position in which the limb is photographed is indicated and (4) the cause of the whole deformity may be analyzed at a glance.

Results of Schick Method.—Two hundred and twelve persons, all members of the staff of a hospital, were tested by the Schick method. Eighty-five, or 40 per cent., gave a positive or pseudopositive reaction. Among those who had had previous attacks of diphtheria, eighteen gave a negative test (one of these had diphtheria twice) and six a positive test (one of these had also had two attacks within three years). Among the older members of the staff who had been in contact with diphtheria for periods varying from a few months to five and a half years without contracting the disease, seven gave positive reactions varying from slight to very strong. Among those giving negative tests, two developed clinically follicular tonsillitis with a profuse growth of diphtheria bacilli in culture, and three developed a definite clinical attack of diphtheria, including the author who contracted the disease after fourteen years' daily contact with it, and the ward sister who had had eight years fever nursing. Among those inoculated with toxin-antitoxin mixture, two developed diphtheria, while being immunized (not then being in contact with known cases of diphtheria), and one two months after completion of an immunizing course. Out of 127 with negative Schick tests, five, or 4 per cent., contracted scarlet fever. This suggests some relationship in the susceptibility of the two diseases and is in accord with the well known fact that those suffering from scarlet fever are highly susceptible to diphtheria, and vice versa. These results suggest that the claims for these methods are decidedly exaggerated in the presence of heavy and repeated doses of a virulent type of infection, such as was present in this area during most of the time in which these observations were made.

Diphtheria of Toe.—In Roberts' case the diphtheric lesion was limited to the site of a blister on the big toe. Bacilli were found and prompt relief followed the administration of antitoxin.

2: 817-864 (Oct. 13) 1923

Some Changes in Obstetric Practice. H. R. Spencer.—p. 817.
*Manipulative Surgery. R. C. Elmslie.—p. 821.
*Relation of Gastric Ulcer to Carcinoma. J. Morley.—p. 823.
Glaucoma. G. P. Hawker.—p. 826.
Two Cases of Dipylidium Caninum in Children. J. Ferguson and G. R. Tudhope.—p. 828.
Use of Insulin in General Practice. H. MacLean.—p. 829.
Traumatic Rupture of Hydronephrosis. J. B. Macalpine.—p. 833.
Congenital Tumor (Fibroma) of Tibia. D. D. Pinnock.—p. 833.
Future of Drug Therapy. W. E. Dixon.—p. 845.

Manipulative Surgery.—Whenever there is a possibility of improvement by well judged manipulation Elmslie urges its trial. Whenever a joint or muscle is apparently normal, yet painful, manipulation is worth a trial. Disease and mechanical defect having been eliminated, no possible harm can result, and in nine cases out of ten some minor adhesions, undetectable by clinical examination, will be felt to give and the patient will be cured. Elmslie believes that surgeons fail to cure by manipulation most often by their failure to give the method a trial.

Relation of Gastric Ulcer to Carcinoma.—The cases on which Morley bases his conclusions have been under his care and the records have all been taken by him personally or by residents under his direct supervision. The cases fall into three groups. Group 1 was a series of fifty cases of chronic gastric ulcers, removed either by partial gastrectomy or local excision. Group 2, supplementary to Group 1, consisted of ten chronic ulcers treated by simple gastroenterostomy. Group 3 was a series of fifty-six cases of clinically proved cancer of the stomach. While it cannot be denied that cancer may develop in the edge of a chronic gastric ulcer, or in some part of a stomach that is or has been afflicted by a chronic gastric ulcer, Morley asserts that his investigation provides no evidence that the development of cancer on gastric ulcer occurs with anything like the frequency claimed by some authorities. The evidence set forth in this paper points to the conclusion that a patient with a chronic simple ulcer of the stomach is little, if at all, more liable to cancer than a healthy person. Roughly, 30 per cent., of cases of cancer of the stomach give rise to symptoms which simulate more or less closely those usually associated with simple ulcer, and Morley holds that it is this ulcer simulating cancer which is responsible for the belief in the cancerous degeneration of simple ulcers.

South African Medical Record, Cape Town

21: 413-436 (Sept. 22) 1923

Microscopy of Living Eye by Means of Gullstrand's Slit Lamp. W. Mulder.—p. 415.
Case of Diabetes Mellitus Treated with Insulin. F. W. P. Cluver.—p. 421.
Benign Tertian Malaria. D. M. MacRae.—p. 424.
Epidemic Cerebrospinal Meningitis. J. P. Johnson.—p. 426.
Edinburgh Gas Pipe Frame for Fractured Femurs. A. L. McGregor.—p. 426.

Archives Franco-Belges de Chirurgie, Brussels

26: 615-710 (July) 1923

*Denervation of the Kidney. E. Papin.—p. 615.
*Tuberculous Pyosalpinx. G. Gayet.—p. 644.
*Calculus in Lumbar Ureter. M. Soubeyran.—p. 663.
Anesthesia in Surgery of the Kidney. F. Cathelin.—p. 670.

Neurectomy of the Renal Nerves.—Papin has performed this operation in twenty-seven cases, and declares it is absolutely harmless. All his patients were permanently relieved of pains in the kidney or were materially improved, without the nephrectomy which would otherwise have been required. He describes the technic and the details of some typical cases of painful hematuric nephritis or neuralgia in the kidney. He does not cut but tears the nerves in the kidney pedicle. The operation in one case was done on the remaining kidney, two years after nephrectomy for hydronephrosis.

Tuberculous Pyosalpinx.—Gayet's two personal cases and several in the literature show that a tuberculous abscess in the right adnexa can perforate into the bladder insidiously. The pus in the urine was always a casual discovery. This explains, perhaps, the rarity of these cases, and teaches that the urine should be watched in women with tuberculosis in the genital tract. The intermittent appearance of the pus is characteristic of these fistulas; with rest the pus may disappear. The fistula may become obliterated at times, like a perianal fistula. In his cases, cystoscopy had to be repeated several times before the fistula was recognized by pus issuing when pressure was applied to the abdomen. Catheterization of the ureters eliminates disease of the kidneys. Radiography is instructive, especially when the contrast suspension is injected into the fistula through a ureteral catheter. In a third case there was a history of adnexitis, but the bladder was of normal aspect and the pus came from one kidney. The prognosis is excellent after removal of the tuberculous adnexa. In one of his cases, extirpation of one tube alone cured the patient. The laparotomy must be followed by drainage into the vagina. The high fistula usually heals spontaneously, with a self-retaining catheter, but in some of the cases on record the fistula was resected.

Calculus in Lumbar Ureter.—Soubeyran removed the calculus through a lumbar incision. It was impacted in the ureter about 5 cm. below the pelvis, and measured 7 by 35 mm. In aseptic conditions, drainage is not necessary. Otherwise he recommends a retention ureteral catheter. In case the kidney is large and inflamed, decapsulation may be advisable, and fixation, if there is a tendency to ptosis.

Bulletin Médical, Paris

37: 971-998 (Aug. 25) 1923

*Normal Tonus of Vegetative Nervous System. D. Daniélopolu.—p. 977.
Examination of Vegetative System in Man. D. Daniélopolu.—p. 980.
Classification of Abnormal Conditions of the Vegetative Nervous System. D. Daniélopolu.—p. 983.
Surgery of Vegetative System. D. Daniélopolu.—p. 988.

The Vegetative Nervous System.—This issue of the *Bulletin* is devoted to Daniélopolu's survey of the vegetative nervous system. His own contributions to the subject have already been reviewed in these columns.

Journal de Chirurgie, Paris

22: 113-224 (Aug.) 1923

*Mechanical Injury of Brachial Plexus. J. Sénèque.—p. 113.
Intraspinal Anesthesia. Oudard, Jean and Solcard.—p. 134.

Mechanical Injury of Brachial Plexus.—Sénèque's seven cases show the necessity of looking for changes in the transverse process of the seventh cervical vertebra in cases of apparent neuritis of the brachial plexus. A roentgen-ray examination may reveal the cause and lead to a surgical cure.

Journal d'Urologie Médicale et Chirurgicale, Paris

16: 81-176 (Aug.) 1923

Mesothorium in Treatment of Bladder Cancer. F. Legueu et al.—p. 81.
Syphilis of the Bladder. E. F. Chocholka.—p. 85.
*Treatment of Gonorrhea with Permanganate. L. Boulanger.—p. 99.
*Ureosecretory Coefficient. Lanzillotta and Colombet.—p. 109.
Case of Pneumaturia. L. Thévenot and Lebœuf.—p. 117.
Hypernephroma with Milky Ascites. Pervès.—p. 121.

Treatment of Gonorrhea with Permanganate.—Boulanger favors potassium permanganate in the treatment of gonorrhea.

Formula to Express Factors Governing Excretion of Urea.—Lanzillotto and Colombet made fifty-five parallel determinations of Van Slyke's and Ambard's ureosecretory coefficients. They found that both estimations give the same results, the calculation according to Van Slyke being easier. Neither coefficient is an absolute index of the renal function.

Presse Médicale, Paris

31: 769-776 (Sept. 8) 1923

*The Suprarenal Apparatus. A. C. da Costa.—p. 769.
*Syphilitic Meningitis Simulating Malaria. H. Schaeffer.—p. 772.
Tibiotarsal Osteoplastic Arthrodesis. J. M. Vilardell.—p. 773.
Work of the Council on Pharmacy and Chemistry. Cheinisse.—p. 774.

The Suprarenals.—Da Costa summarizes existing knowledge of the embryology and histology of the suprarenals, and propounds several questions which press for solution. He says that the explanations accepted to date are untenable.

Tertiary Syphilitic Meningitis.—A tuberculous origin had been assumed at first, but the Wassermann reaction in the spinal fluid and the favorable course under arsphenamin treatment confirmed the syphilitic nature of the meningitis. The case was peculiar in the ague-like attacks of chills, fever and sweating. These were evidently part of the meningitic syndrome as they disappeared with recovery.

31: 777-788 (Sept. 12) 1923

Surgery of Blood Vessels. J. Goyanes.—p. 777.
Puerperal Infection and Vaginal Hysterectomy. E. Douay.—p. 781.
*Kidney Function in Mental Disease. R. Targowla and M. Badonnel.—p. 782.

Renal Insufficiency in Mental Diseases.—Targowla and Badonnel determined the ureosecretory coefficient and the elimination of phenolsulphonephthalein in patients suffering from mental diseases. Though the two tests disagreed at times, they found that impaired function of the kidneys was frequent, especially in states of confusion, mania and melancholia. Diuretics are without effect, but function becomes normal with amelioration of the mental state. Among twenty-two cases of general paralysis, nineteen had insufficiency of the kidneys.

31: 797-804 (Sept. 19) 1923

*Action of Drugs on Gastric Secretion. T. Hernando.—p. 797.
Deficiencies of Artificial Pneumothorax. Hervé and Roussel—p. 801.
*Liver Function Test. W. Filinski.—p. 803.

Action of Drugs on Gastric Secretion.—Hernando found no essential differences between the gastric secretion after an Ewald test meal, or a 5 per cent. solution of alcohol or of ether, and pure water. Atropin given by mouth or subcutaneously or 0.125 mg. intravenously diminishes the secretion and acidity. If the intravenous injection was increased to 0.25 mg. and given half an hour after the water, it had, instead, a stimulating action. If it was given one hour before the meal, the secretion was diminished. Epinephrin given by mouth or intravenously increased the secretion and acidity. Intramuscular injections had an inhibiting effect.

Liver Function Test.—Filinski gives the patient 100 gm. of glucose or 150 gm. of honey in 300 c.c. of tea, on a fasting stomach, and observes the urine in two hour portions for twelve hours, during which no proteins are taken. In thirty cases of affections of the liver, there was an increase in urobilinogen in the urine after four to ten hours. Among thirty-five controls tested, only five were positive, and even in these, some disturbance of the liver function was probable.

31: 805-812 (Sept. 22) 1923

Malaria in France. L. Rivet.—p. 805.
*Intubation of the Duodenum. Gaston-Durand and Binet.—p. 806.
*Hebephrenia and Arsphenamin. M. Page.—p. 807.
Improved Cystoscopy. L. Phélip.—p. 808.
The Canal in the Heel. A. Raiga.—p. 808.
Pancreas Extract in Treatment of Eczemas of Infants. L. Cheinisse.—p. 811.

Intubation of the Duodenum.—Gaston-Durand and Binet consider radioscopic control the only reliable technic. An alkaline fluid may come from the stomach and an acid from the duodenum.

Hebephrenia and Arsphenamin.—Page had excellent results with arsphenamin treatment in five cases of hebephrenia. Syphilis was present in the antecedents of each of these five patients. Three were girls.

31: 813-824 (Sept. 26) 1923

Relations Between the Ear and the Female Genitals and Endocrines. P. Dalché and M. Labernadie.—p. 813.
Diverticula of the Duodenum. R. Bonneau.—p. 817.
*Vasomotor Line in Gangrene. A. Cosacesco.—p. 819.
Pathogenesis of Tetany. J. Rouillard.—p. 820.

Vasomotor Line in Gangrene.—Cosacesco draws a line on the extremity with a fork. The redness of the vasomotor reaction (line) resulting as well as the speed of its appearance, its continuity, intensity and duration are good indexes of the peripheral circulation as tested at various levels.

Progrès Médical, Paris

421-432 (Aug. 25) 1923

*Cutaneous White Spot. Laignel-Lavastine.—p. 421.
Relations of Epidemic Encephalitis to Paralysis Agitans. C. Achard.—p. 424.

Cutaneous Sympathetic Syndromes and the White Spot.—Laignel-Lavastine reports his observations on the duration of a white spot produced by the pressure of a finger on the skin, and other details. The temperature of the room is important. He described this sign together with Hallion in 1902.

Schweizerische medizinische Wochenschrift, Basel

53: 769-788 (Aug. 16) 1923

*Simplified Sphygmobolography. H. Sahli.—p. 769.
Active Immunization Against Diphtheria. W. Loewenthal.—p. 773.
Radium in Treatment of Lupus of Nasal Mucosa. Baumgartner.—p. 775.
Capillary Circulation in High Altitudes. P. Liebesny.—p. 777. Reply. E. Luscher.—p. 778.
"Heart Shape and Height of Diaphragm." W. Knoll.—p. 778.

Simplified Sphygmobolography.—Sahli publishes a simplified model of his sphygmobolograph.

53: 789-812 (Aug. 23) 1923

*Clinical Hematology. Naegeli.—p. 789.
*Permeability of the Meninges. L. Stern.—p. 792.
Football Contusion of Colon. A. Ritter.—p. 795.
Determination of Lipoids. E. Herzfeld.—p. 797.
*Cardiovascular Disease in Mountain Population. B. Rocco.—p. 798.
Intoxication by Iodin. M. Kesselring.—p. 801.
Thyroid Treatment of Genital Pruritus. A. Bregmann.—p. 801.

Clinical Hematology.—Naegeli sees an important hematologic improvement in the investigation of qualitative changes of the blood corpuscles. The neutrophils are degenerated in sepsis and influenza, while they are intact in epidemic encephalitis and other affections of organs derived from the ectoderm. This speaks against an identity of influenza with epidemic encephalitis. Clinically similar affections, such as anginas for instance, can be differentiated by means of hematology.

Permeability of the Meninges.—Stern prefers the term "hemato-encephalic barrier," to "permeability of the meninges." This barrier protects the central nervous system from exogenous and endogenous poisons. She found with Batelli that the direct introduction of extracts of some endocrine glands may kill the animal. On the other hand, a too strong barrier might prevent the action of necessary hormones. Monakow attributes to this barrier certain forms of mental disease. The resistance of some animals to poisons is due to this barrier. A rabbit can stand subcutaneous injections of atropin, but if it is introduced into the ventricles of the brain, the animal is as intolerant as the dog. Intoxication by certain bacterial poisons (tuberculin, diphtheria toxin) increases the passage of the substances from the blood to the cerebrospinal fluid as long as the fever lasts. Drugs introduced into the lumbar sac rarely reach the ventricles. It is probable that a similar barrier exists between the blood and other organs. The hemato-encephalic barrier allows passage of certain drugs and not of others. Bromin passes, but not iodin; morphin, but not curarin.

Cardiovascular Disease in Mountain Population.—Rocco reports his experiences with heart affections at St. Moritz. A weakness of the left ventricle with dilatation and stasis indicates the necessity for leaving the mountains. Well compensated heart defects cause no disturbance.

53: 813-832 (Aug. 30) 1923

*Insulin Treatment. H. Sahli.—p. 813.
Pancreatic Extracts in Treatment of Diabetes. Guggenheim.—p. 819.
Fight Against Cancer of Female Genital Organs. Beuttner.—p. 823.
Friedmann's Vaccine. C. Fischer.—p. 827.

Insulin Treatment.—Sahli deals especially with Zülzer's results with pancreatic extracts in 1907. They had a good influence on acidosis, though they were toxic. He claims that if the medical world had taken sufficient notice of Zülzer's work, it might not have been necessary to wait sixteen years for insulin. Insulin is a supplement to dietetic treatment. It is essential in coma and in complications of diabetes. In tuberculosis care is necessary since Blum found an unfavorable influence in this complication.

Archivio di Patologia e Clinica Medica, Bologna

2: 337-447 (Aug. 15) 1923

Displacement of Mediastinum from Sclerosis. A. Sega.—p. 337.
Volatile Fatty Acids in Feces. A. Cecchini.—p. 361.
*Hemolysins and Antilysins in Urine. L. Condorelli.—p. 393.
Present Status of Inorganic Heart Murmurs. Sacconaghi.—p. 425.

Hemolysins and Antilysins in Urine.—Condorelli found in human urine a daily excretion of about 0.40 gm. of the esters of cholesterol (chiefly oleate) and 0.70 of fatty acids. The esters of cholesterol have a protective action against hemolysis. The fatty acids could be divided into two fractions, which differ in their hemolytic properties.

Riforma Medica, Naples

39: 817-840 (Aug. 27) 1923

Treatment of Tuberculosis with Calomel Ointment. N. Pane.—p. 817.
*Agglutination by Serums in Glucose Solutions. I. Jacono.—p. 817.
Interlobar Pleurisy. E. Musante.—p. 821.
Liver Cirrhosis and Splenomegaly from Amebic Dysentery. F. Galmozzi. —p. 825.
Syphilis Infection by Bite. F. Viola.—p. 828.
Diagnosis of Perinephritic Abscess. A. Ferrannini.—p. 828.

Agglutination by Serums in Glucose Solutions.—Jacono made emulsions of bacilli in a 4.7 per cent. solution of glucose. He found that such bacilli are agglutinated by normal serum, and that the titer of specific serums is increased. He warns, therefore, against the use of a 4 per cent. glucose solution for blood broth culture mediums.

Anales de la Facultad de Medicina de Montevideo

8: 445-618 (June) 1923

*Tertiary Syphilitic Lesions. J. May.—p. 445.
Albumin Milk in Infant Feeding. R. Berro.—p. 466.
Breathing Exercises. V. Escardo y Anaya.—p. 501.
Treatment of Hyperthyroidism. J. T. Case.—p. 546.
Sarcoma of Upper Jaw. J. Barnhill.—p. 551.
Treatment of Ureteral Calculi by Cytoscopic Manipulations. A. J. Crowell.—p. 554.
Tendon Transplants in the Forearm. R. Kennedy.—p. 558.
Insulin in Treatment of Diabetes. B. Varela Fuentes.—p. 559.
*Aneurysm of Hepatic Artery. J. H. May.—p. 574.
*Treatment of Carbuncle. D. Prat.—p. 576.

Tertiary Syphilitic Lesions.—May gives nineteen illustrations of various cases, saying that 87 per cent. of the women and 50 per cent. of the men in this category were unaware they had syphilis. Some with progressing tertiary lesions in skin or mucous membrane or both gave a negative Wassermann reaction.

Aneurysm of Hepatic Artery.—Two colored plates show the aneurysm, which was a necropsy surprise.

Treatment of Anthrax.—Prat has had a mortality of 18.77 per cent. in his 309 cases of anthrax since 1915. The mortality is much higher when the lesion is on the neck or face. Specific antiserum given intravenously in large doses is the most effective treatment.

Brazil-Medico, Rio de Janeiro

2: 69-88 (Aug. 4) 1923

*Spread of Heart Murmurs. J. A. G. Fróes.—p. 69.
Arsenicals in Treatment of Syphilis. E. Tornaghi.—p. 73.
The Mosquitoes of Province of Rio. C. Pinto.—p. 77.
*Preventive Treatment of Senility. E. Berger.—p. 81.

Extensive Propagation of Heart Murmurs.—Fróes refers to murmurs that are heard over the entire trunk, comparing several personal with some collected cases. These patients are generally children, with unusually large hearts and narrow chests.

Preventive Treatment of Senility.—Berger reviews the various prophets in this line from before Solomon to Steinach. He remarks that none of them lived to a great age. Metchnikoff and Dubois died at 68, and Brown-Sequard much younger. Berger himself tried the Metchnikoff treatment for years, but his health has been so poor that he had to retire from practice at 55. He adds that it is to be hoped that Armaingaud, Fletcher and Steinach prove in their own persons the value of their theories. [Fletcher died in 1919, at the age of 70.]

2: 105-116 (Aug. 18) 1923

*Parenteral Protein Therapy in Eye Disease. E. Campos.—p. 105.
Diuretic Action of Cassava Juice. J. Marques da Rocha.—p. 106.

Parenteral Injections of Milk in Ophthalmology.—Campos has been applying protein therapy since early in 1921 in treatment of disease of the eye, and regards it as great progress in suitable cases. The relief from pain is so great that the patients clamor for new injections. It is especially effective in inflammatory processes in the cornea and iris which drag along without healing, as also when used from the start. He has trained a nurse to collect and sterilize the milk and inject it in the hospital patients or outpatients. In rebellious eczematous keratoconjunctivitis in children, the change for the better was pronounced by the second or third injection in most cases. In a few no benefit was apparent, although conditions seemed to be equally favorable.

2: 117-136 (Aug. 25) 1923

Bothriomycosis. P. Severiano de Magalhães.—p. 117.
Intertrigo from Saccharomycetes. F. Silva.—p. 119.
Symptomatology of Base of Brain. W. Berardinelli.—p. 127.

2: 137-152 (Sept. 1) 1923

*Spastic Stenosis of the Esophagus. E. Vampré.—p. 137. Conc'n, p. 158.
Plastic Operation on the Hip Joint. J. Monjardino.—p. 144.
Disease in Fishes. G. Hasselmann.—p. 147.

Spastic Stenosis of the Esophagus.—Enjolras Vampré states that this affection, known locally as *mal de engasgo*, is so prevalent in certain portions of Brazil as to suggest almost an epidemic of spasmodic dysphagia. Once acquired it is never thrown off, although there may be long intervals between attacks. In some cases the difficulty in swallowing returns so often and so intense that fatal inanition may result. In a grave case he incised the circular muscle fibers of the esophagus in two longitudinal lines at the region of the stenosis without opening the mucosa, and the spastic dysphagia was cured at one stroke. He ascribes the dysphagia to intermittent spasm of the part of the esophagus below the diaphragm. In the case described, the esophagus for a stretch of 4 or 5 cm. was contracted to the size of an ordinary pencil, above which it was much dilated. The epidemic prevalence, the enlarged spleen, and the adhesions found at the operation, suggest an infectious parasitic origin, although bacteriologic examination has been negative to date. The cardiospasm seems to be due to a chronic juxtadiaphragmatic periesophagitis. It has been observed at all ages, from infancy to 80. The cause responsible for the affection is liable to induce nervous disturbances which may suggest polyneuritis.

Gaceta Médica de Caracas, Caracas

30: 49-64 (Feb. 28) 1923

*The Medical Geography of Tachira. C. J. Bello.—p. 49. Conc'n, p. 70.

The Medical Geography of Venezuela.—At the third National Medical Congress of Venezuela, in 1921, complete reports on the diseases, medical flora and other medical aspects of the various states of Venezuela were presented by different writers, and the *Gaceta* has devoted much space to these comprehensive monographs on medical geography. Bello's is devoted to the nosography of the state of Tachira. In conclusion he compares the death rate from various diseases with the death rate of Venezuela at large. Leprosy is endemic, but beriberi is unknown.

Gaceta Médica de Mexico, Mexico City

55: 435-686 (July) 1923

*Symphysiotomy and Pubiotomy. A. López Hermosa.—p. 435.
*Stenosis of Urethra. F. Castillo Nájera.—p. 455.
*Identification of Drugs. J. M. Noriega.—p. 465.
*Transient Alexia and Anarthria. J. de Jesus González.—p. 474.
Asses' Milk. M. Cordero.—p. 483.
Koepp's Contact Glass for Genioscopy. E. F. Montano.—p. 492.
Surgical Diseases Should Be Treated Surgically. U. Valdés.—p. 494.
The Ideals of Treatment. J. Terrés.—p. 499.
*The Ovary in Menstruation. E. Ramírez.—p. 504.
*Suppurative Hepatitis and Diarrhea. E. Escomel.—p. 532.
An Experiment in Mental Hygiene. W. A. Evans.—p. 543.
Presidential Address, Academy of Medicine, 1921. German Diaz Lombardo.—p. 603. Idem., 1922. N. Léon.—p. 609.

Symphysiotomy and Pubiotomy.—López Hermosa presents arguments to prove the superior advantages of subcutaneous pubiotomy, both as regards facility of execution and prognosis. He warns that it is contraindicated in cases of genital infection, with ankylosis of the sacro-iliac symphysis, and when the shortest diameter is less than 7 cm.

Stenosis of the Urethra.—Castillo Nájera analyzes 432 cases of stenosis of the urethra. There was recurrence after operation in twenty-three cases, and one patient succumbed to pericarditis secondary to a periurethral abscess. In another case, with recovery, hemolytic streptococci were cultivated from multiple complicating suppurative processes in joints and muscles. Experience with Desnos' cylindrical electrolysis has been favorable, but he insists on the necessity for prolonged dilatation, whether or not there is any operation.

Identification of Drugs.—Twenty-nine microscopic fields are reproduced to aid in recognizing different drugs in pulverized form.

Transient Alexia and Anarthria.—González describes a case of volitional and conscious hallucinations, with disturbances of speech, all of mental origin, which he has had under observation for twenty years. The man is now aged 50, and a brother presents the same pathologic exaggeration of the imagination.

Physiology of the Ovary in Relation to Cyclic Function.—Ramírez removed the corpora lutea in three patients during operations for displacement of the uterus, the fifth, ninth and seventeenth day after a menstrual period. Each of the women, three or five days after the operation, presented hemorrhage which seemed to be normal menstruation. The significance of the interstitial tissue of the ovary for the cyclic genital processes was studied in various animals, as he describes. These interstitial cells in the ovary are found not only in mammals, but also in birds, reptiles and other vertebrates. He argues that the interstitial gland is responsible for the secondary sexual characters, including rut and menstruation. It develops from the theca of the follicle after atresia, and the products of the interstitial gland have a wide-spread influence on various functions. This influence is manifest in the blood pressure during menstruation, as also in the different reaction to an extract of the menstrual secretion, applied to a scarified area, during or outside of a menstrual period. The fact that the premenstrual symptoms subside when the menstrual flow is under way, while they persist and become exaggerated if the menstrual flow is impeded or defective, suggests that these substances generated by the interstitial cells are eliminated in the menstrual flow.

Suppuration in the Liver Cured by Emetin.—Escomel's success with emetin in amebic suppurative hepatitis has already been recorded in these columns (THE JOURNAL, Aug. 18, 1923, p. 614). In some of his twenty-five cases, the liver had been infected by amebas from alveolar pyorrhea or from the stomach, without dysentery. He begins at once the daily subcutaneous or intravenous injection of 0.02 gm. each of emetin and spartein, in 2 c.c. of distilled water, reducing the dose for children. No incision, no puncture is required. The number of injections ranges from ten to thirty.

Turpentine Treatment of Diarrhea.—Summarized, Aug. 18, 1923, p. 614, when published elsewhere. Escomel reiterates here the necessity for destroying the micro-organisms in the rectum in liver disease and diarrhea. The rectum is the hotbed for micro-organisms like the ameba, and local sterilization is an important adjuvant to the emetin treatment.

Revista de la Asoc. Méd. Argentina, Buenos Aires

36: 283-425 (July) 1923

*Removal of Pituitary in Toads. L. Giusti and B. A. Houssay.—p. 283.
Nuttalia Equi in Blood of Horses. A. Bachmann et al.—p. 288.
Results of Vaccination Against Diphtheria. A. Bachmann and J. M. de la Barrera.—p. 290.
*The Cleft Forearm Amputation. G. Bosch Arana.—p. 295.
Congenital Papilloma of Tongue. M. Ruiz Moreno.—p. 298.
*Prosthesis for Reconstruction of the Face. Giovacchini.—p. 312.
*Treatment of Acute and Chronic Rheumatism. S. Libarona Brian.— p.319.
Pseudo Cancers of the Stomach. R. Novaro and L. Bravo Zamora.—p. 332.
*Treatment of Epidemic Encephalitis. Tiburcio Padilla.—p. 344.
*Ileus from Inherited Syphilis. P. Escudero and G. Peco.—p. 348.
Collargol in Infectious Diseases. R. A. Vaccarezza.—p. 355.
*Diplopia in Epidemic Encephalitis. J. M. Obarrio.—p. 371.
Collet's Syndrome. J. C. Montanaro.—p. 399.
Infiltration with Blood as Complication of Elliot's Operation. A. Oyenard.—p. 409.
Skin Implant in Symblepharon. J. M. Jorge and P. Satanowsky.—p. 411.
Amyloid Degeneration of Conjunctiva. E. Adrogue.—p. 417.
Lagleyze-von Hippel Retinitis. R. R. Gil.—p. 422.

Removal of the Pituitary in Toads.—In this third report of research on *Bufo marinus,* the effect on the skin and genital organs of removal of the pituitary was studied. Blackening of the skin and abortions were constant.

The Radio-Ulnar Gripper Method of Amputation.—This method of slitting the forearm to enable articles to be gripped in the long cleft has been described in these columns. Five illustrations show the effective grip thus realized, enabling the subject to feed himself, etc. It is generally called the Krukenberg-Putti forceps method.

Surgical Reconstruction of the Face.—Giovacchini's illustrations demonstrate the advantages of the application of the principles of dental prostheses to aid in reconstruction of the face, and fixation of fractures to avert deformity.

Treatment of Rheumatism.—Libarona Brian states that he has treated with a glycerin extract of thyroid gland tissue fully 700 of his 1,000 patients with rheumatism, and has found it most reliable. If there is no deformity, the outlook is always favorable, regardless of the duration of the rheumatism. He gives no details of the technic beyond stating that a daily subcutaneous injection of 0.06 gm. of the *extracto glicerico de glandotirina* is sufficient. The benefit is pronounced even in a few hours after the first injection.

Treatment of Epidemic Encephalitis.—Padilla comments on the reappearance of this disease in Buenos Aires.

Stenosis of the Rectum from Inherited Syphilis.—A gummatous cellulitis in the pelvis was responsible for the ileus in the man, aged 37, with inherited syphilis. The differential diagnosis was based on the results of treatment as for syphilis, the prostate declining in size, the tumor in the left iliac fossa disappearing, and the rectum and sigmoid becoming normally permeable. The Wassermann test had been constantly negative.

Physiologic Diplopia.—Obarrio explains that diplopia as the patient rouses and wakes in epidemic encephalitis is merely an exaggeration of the physiologic diplopia. It is distinct from paralytic diplopia.

Revista Médica del Uruguay, Montevideo

26: 293-344 (July) 1923

*Puerperal Infection. A. Turenne.—p. 297.
*Parkinsonian Syndrome After Epidemic Encephalitis. C. Brito Foresti.—p. 299.
Action of Bismuth on Syphilis. J. May.—p. 310.

Puerperal Infection.—Turenne injects pituitary extract, fractioned, through the twenty-four hours and applies an icebag to the hypogastrium, and that is all. He declares that the prospects of a cure are inversely proportional to the aggressiveness of our measures, and directly proportional to the respect we show for the spontaneous tendency to organic and functional recuperation.

Parkinsonian Syndrome.—The woman, now aged 32, has presented symptoms of paralysis agitans since 1921. At that time she had an attack of what was supposed to be influenza, but the parkinsonian sequelae stamp it as an unsuspected case of epidemic encephalitis.

26: 345-388 (Aug.) 1923

Pituitary Extract. A. Turenne.—p. 345.
*Early Acute Forms of Neurosyphilis. Nonne.—p. 350.
Fixation of Bismuth in the Tissues. May and Garmendia.—p. 360.
Bismuth in Treatment of Syphilis. J. Etchechury and J. Iglesias Castellanos.—p. 363.

Acute Forms of Neurosyphilis.—Nonne recalls that acute meningitis of syphilitic origin is rare, but he has encountered five cases. The extremely acute meningitis in one young woman developed four months after infection (from a kiss). The pressure in the spinal fluid was 500 mm., but under specific treatment it had returned to normal by the sixth week. The prognosis is generally favorable under specific treatment, but one of his patients in this group, a man aged 48, developed meningitis six months after infection for which he had been given mercury and sixteen injections of arsphenamin. Resumption of specific treatment failed to avert the fatal outcome, and the microscope revealed inflammation of the pia throughout the entire nervous system. In a fifth case the febrile meningitis developed four weeks after infection, but it apparently subsided under neo-arsphenamin treatment. Headache and convulsions returned two months later, and a third time after three months more. The spinal fluid responded to all the tests each time. Necropsy four weeks later revealed a gummatous meningo-encephalitis. The treatment had been apparently thorough in these two men; the three women recovered. Nonne's experience teaches that syphilis should always be considered in every case of acute cerebrospinal meningitis. There were no characteristic features in these cases; they seemed to be ordinary epidemic meningitis.

Revista de Medicina y Cirugía de la Habana, Havana

28: 529-554 (Aug. 10) 1923

*Total Rectosigmoidectomy. R. Menocal.—p. 529.
History of Medicine in Cuba. C. M. Trelles.—p. 532.
*Phototherapy in Dermatology. Sicilia.—p. 535.

Resection of the Rectum.—Menocal was unable to determine the nature of the stenosis of the rectum on account of the profuse suppuration, which involved also the sigmoid flexure. The patient was relieved from all disturbances by extensive rectosigmoidectomy. The segment of bowel resected was hard and fibrous. The stenosis was evidently secondary to syphilitic rectitis.

Phototherapy in Dermatology.—Sicilia defines the three main groups of skin and syphilitic disease which are peculiarly amenable to radiant energy and great heat: itching dermatoses or essential pruritus, affections with torpid secretion and vitality, especially with sluggish metabolism, but above all cases calling for absorption of effusions and suffusions.

28: 555-586 (Aug. 25) 1923

*Treatment of Genital Prolapse. E. Stincer.—p. 555.
Distomatosis of the Liver. W. H. Hoffmann and A. Guerra.—p. 558.
*Epidemic Nephritis? A. Chardiet.—p. 562.

Treatment of Genital Prolapse.—Stincer has been gratified by the satisfactory outcome in five cases in which after subtotal abdominal hysterectomy he applied Presno's method of fastening the stump. Stout catgut is passed diagonally through the stump of the cervix from each side. The two catgut threads cross in the center. The anterior and posterior ends of the catgut are passed through the rectus muscles and their sheaths. When the ends are tied, the stump is supported and is protected by the muscle; no by-effects have been observed.

Is There an Epidemic of Nephritis?—Chardiet is inclined to answer his question in the affirmative as he has encountered so many cases of nephritis recently. Several members of the household were affected at the same time with an acute nephritis for which no special cause could be discovered. He cites Osler's reference to an Italian epidemic of acute primary infectious nephritis, similar to the cases he has observed. In none of the cases had there been recent tonsillitis, scarlet fever or influenza to explain the kidney affection. The nephritis was of the edema type, with notable albuminuria and fever. Anuria was often pronounced from the first day, and uremia was the cause of death. To date, he says, only children have been affected.

Deutsche medizinische Wochenschrift, Berlin

49: 1039-1072 (Aug. 10) 1923

Testing "Bayer 205" in Africa. F. K. Kleine and Fischer.—p. 1039.
*Gradation of Specificity. M. Westenhöfer.—p. 1041.
*Nonspecific Agglutination. H. Curschmann.—p. 1045.
*Serotherapy of Cancer. Blumenthal and Halberstaedter.—p. 1046.
Possibilities with Intravital Staining. Seyderhelm and Lampe.—p. 1049.
Protein Therapy in Gynecology. F. Wolff.—p. 1051.
Isodose Charts in Roentgenotherapy. C. Gottlieb.—p. 1054.
Diagnosis of Pregnancy with Phlorizin. Dowig.—p. 1056.
Treatment of Mucosa of Uterus. A. Steiger.—p. 1057.
*Headaches After Lumbar Puncture. A. Calmann.—p. 1058.
Cantani's Diet in Treatment of Tendency to Oxalate Kidney Calculi. J. Fleischer.—p. 1058.
Medicolegal Questions Affecting the Profession. Ebermayer.—p. 1059.

Gradation of Specificity.—Westenhöfer considers a local augmentation of living and not living species-specific substances as the main feature of inflammation. He calls it gradation of specificity (*Artsteigerung*) and explains that it is only a stronger reaction than the necessary physiologic vital process. There is no teleologic view in his theory. It makes no distinction from the biologic standpoint between an inflammation that ends in restitution or in a caseous pneumonia. The gradation of specificity is most pronounced in the mesenchyma, though other tissues may be capable of it likewise (therefore he admits a parenchymatous inflammation.) Immunity is the result of an internal secretion of the mesenchyma. Inflammatory tumors present this gradation of specific character, while real neoplasms signify a loss of it.

Nonspecific Agglutination After Antityphoid Vaccination.—Curschmann finds that many influenza patients show an early rising and quickly passing agglutination of typhoid bacilli (up to 1:400), if they have been vaccinated against typhoid in the last three or four years.

Serotherapy of Cancer.—Blumenthal and Halberstaedter find that no method tested so far can compare with radiotherapy, though even this cannot be considered an unconditional cure. The only hope which such attempts give lies in the fact that they demonstrate that it is sometimes possible to influence malignant tumors—we do not know why some can be influenced while others are resistant.

Headaches After Lumbar Puncture.—Calmann reports a case of typical headache after five unsuccessful attempts to make a lumbar puncture. The contemplated intraspinal anesthesia was consequently abandoned, and the operation was done under general anesthesia. He believes therefore that the headache is caused by meningeal irritation and not by loss of cerebrospinal fluid, as no fluid had been drawn in this case.

49: 1073-1106 (Aug. 17) 1923

Treatment of Diabetes with Insulin. W. Ercklentz.—p. 1073.
*Structure of Polymeric Carbohydrates. P. Karrer.—p. 1074.
*The Blood After Phlorizin. L. Dünner and H. Berkowitz.—p. 1075.
*Movements of Capillaries. Schickler et al.—p. 1077.
Malaria and Blackwater Fever. Kuttner and Loewenberg.—p. 1080.
Psychopathology of Asthma. Schultz and Reichmann.—p. 1081.
*Arsenic in Cerebrospinal Fluid. C. Bruhns and H. Dittrich.—p. 1082.
Goiter in School Children. H. Franck.—p. 1084.
Treatment of Torpid Wounds. F. G. Meyer.—p. 1085.
Trichophytosis in Children. E. Langer and E. Rosenbaum.—p. 1086.
Interval Diagnosis of Epilepsy. L. Focher.—p. 1087.
Habitual Epistaxis. Boenninghaus.—p. 1088.
Chloroform Treatment of Typhoid. A. Eeck.—p. 1089.
Spasmophilia in Nurslings. G. Weyl.—p. 1090.
Wound Infection with Swine Erysipelas. Philippsthal.—p. 1090.
Chemotherapy with Acridin. Bieling.—p. 1090.
Collection and Distribution of Human Milk. O. Hilgenfeldt.—p. 1092.

Structure of Polymeric Carbohydrates.—Karrer reviews the new investigations on the constitution of polymeric carbohydrates. Starch and glycogen seem to be polymers of maltose, not of glucose. There are hardly any essential differences between the two substances.

The Blood After Phlorizin.—Dünner and Berkowitz found leukopenia after injections of phlorizin. Jungmann found that the relative number of erythrocytes decreases likewise. The refraction of the serum remains constant. It is therefore probable that the changes are due to a different distribution of blood corpuscles in the body, analogous to that of a hemoclastic crisis.

Movements of the Most Peripheral Part of Capillaries.—Schickler observed in local hyperemias rhythmic contractions of the capillaries at intervals of about ten seconds.

Arsenic in Cerebrospinal Fluid.—Bruhns and Dittrich found arsenic in the cerebrospinal fluid an hour and a half after intravenous injection of neo-arsphenamin in three only of twenty-five patients. When hypertonic salt solution was injected beforehand, no arsenic was found in any of another series of twenty-five patients.

Klinische Wochenschrift, Berlin

2: 1533-1580 (Aug. 13) 1923

Anaerobic Bacilli. J. Zeissler.—p. 1533.
*Daily Output of Bile. Brugsch and Horsters.—p. 1538.
*Tetany and Alkalosis. E. Freudenberg and P. György.—p. 1539.
Treatment of Diabetic Coma with Insulin and Epinephrin. M. Lauritzen.—p. 1540.
*Gastro-Enterostomy as a Disease. B. O. Pribram.—p. 1542.
*Blocking Nerve in Whooping Cough. C. B. Schroeder.—p. 1545.
Clinical Determination of Diastase. A. Adam.—p. 1548.
*Influence of Bicycle Riding on Size of Heart. H. Herxheimer.—p. 1549.
Differentiation of Circumscribed Shadows in the Apical Region by Swallowing. J. Erdélyi.—p. 1551.
Quantitative Determination of Bilirubin in Urine. E. Schilling.—p. 1552.
"Epinephrin Reaction in Man." F. O. Hess.—p. 1553.
Motor Innervation of Diaphragm. K. Schlaepfer.—p. 1554.
*Complement Fixation in Tuberculosis. G. Seiffert.—p. 1554.
Fusospirillar Phlegmon of the Floor of the Mouth. A. Niedermeyer.—p. 1555.
Sarcoma of Midbrain Simulating Epidemic Encephalitis. Sakorrafos.—p. 1556.
Management of Delivery in Atypical Positions of Fetal Head. A. Seitz.—p. 1556.
Pulmonary Tuberculosis in School Children. W. Stephan.—p. 1559.
Pharmacology of Uterus. Kochmann and de Veer.—p. 1560. Conc'n.

Daily Output of Bile and Means to Influence It.—Brugsch and Horsters call the secretion of bile "choleresis" (analogous to diuresis), and believe that it may partly substitute for insufficient excretion of urine. Hemosiderosis is due to an insufficient excretion of iron by the liver. Phenylcinchoninic acid has a marked "choleretic" action.

Tetany and Alkalosis.—Freudenberg and György consider changes in the ionization of calcium as the main factor in the pathogenesis of tetany. A lowering of the calcium ion level in the blood (not necessarily the total calcium content) may be due to changes in the hydrogen ion concentration (respiratory tetany), bicarbonate concentration (gastric tetany or bicarbonate feeding in insufficient kidneys) or the concentration of phosphate ions (in essential tetany). An acceleration of the respiration of the tissues causes an alkalotic tendency in the metabolism. The potassium and phosphate ions which accelerate breathing are augmented in the blood in tetany, while the depressing calcium ions are decreased. Injections of epinephrin may cause a paradoxic hypoglycemic reaction in alkalosis. The blood sugar is decreased in tetany.

Gastro-Enterostomy as a Disease.—Pribram has seen so many patients with disturbances after retrocolic gastroenterostomy, that he considers the condition as a morbid entity. The mechanical explanations are not sufficient. It seems that the disturbances are due to functional and reflex changes. A paradoxic slowing down of the evacuation, in spite of the double opening (pylorus and anastomosis) and a hypersecretion after the meal has left the stomach, are frequent symptoms. The operation in ptosis is followed almost regularly by an increase in the disturbances. While an ulcer may heal spontaneously, or under dietetic or protein treatment, there is no help in such cases of gastro-enterostomy except by resecting and restoring simple conditions. Gastroenterostomy does not prevent the two dangerous complications of ulcers (bleeding and perforation). It should be reserved exclusively for cicatricial stenosis.

Blocking Nerve in Whooping Cough.—Schroeder had bad results with injection of alcohol into the superior laryngeal nerve in children suffering from whooping cough.

Influence of Bicycle Riding on Size of Heart.—Herxheimer found that bicycle riders have larger hearts than men devoted to other sports (including runners and long distance ski runners).

Complement Fixation in Tuberculosis.—Seiffert found that an extract of beeswax prepared in the same way as Boquet and Négre's antigen (combined acetone and methyl alcohol extraction at 75 C.) has properties similar to those of extracts of tubercle bacilli. Lecithin does not seem to be important.

2: 1581-1628 (Aug. 20) 1923

Surgical Treatment of Pulmonary Tuberculosis. G. Baer.—p. 1581.
*Gallbladder Evacuation Reflex. W. Stepp and G. Düttmann.—p. 1587.
*The Peptone Gallbladder Reflex. E. Pribram.—p. 1590.
Sedimentation of Erythrocytes. G. Musa.—p. 1591.
Treatment of Migraine with Phenobarbital. J. Strasburger.—p. 1592.
Contrast Suspension Enema and Insufflation of Colon for Roentgen Examination. A. W. Fischer.—p. 1595.
Digestion Leukocytosis. F. Glaser.—p. 1598.
Calcium and Potassium Content of Blood in Eczema. E. Urbach and F. Simhandl.—p. 1600.
Galvanopalpation. A. Müller.—p. 1602.
"Smallpox in Switzerland." Ascher.—p. 1603.
*Inorganic Substances in Fine Dispersion. W. Heubner.—p. 1603.
Quinin Sensitiveness of Serum and Organ Lipases. Krömeke.—p. 1604.
Surgical Treatment of Hematometra. K. Hellmuth.—p. 1604.
Alveolar Pyorrhea. Present Status. H. Euler.—p. 1605.
Tuberculosis Dispensaries in Clinical Teaching. P. Krause.—p. 1610.

Gallbladder Evacuation Reflex.—Stepp and Düttmann obtained thick bile from the gallbladder by injecting a 5 or 10 per cent. solution of peptone into the duodenum. They observed the contraction of the gallbladder directly on dogs. An oil emulsion, magnesium and sodium sulphate, and certain mineral waters, had similar effects. A spasm of Oddi's muscle was not overcome by atropin, papaverin, or other drugs. Hot dressings applied on the gallbladder region seemed to accomplish the purpose better. The infusion of the peptone solution provoked sometimes a spasm of this muscle.

The Peptone Gallbladder Reflex.—Pribram observed contractions of the gallbladder after duodenal injection of peptone during operations on human subjects.

Action of Inorganic Substances in Fine Dispersion.—Heubner observed a typical intoxication with ascending paralysis in animals after calcium salts. Combination with phosphate enhanced both the antichemotic and the paralyzing action, especially when given as a very fine suspension of calcium phosphate. Other inorganic substances in a fine dispersion had a similar action.

Medizinische Klinik, Berlin

19: 1143-1180 (Aug. 19-26) 1923

*Toxemia of Pregnancy. H. Sellheim.—p. 1143.
*Changes in Leukocyte Count. Glaser and Buschmann.—p. 1144.
*Early Neurosyphilis. H. Pette.—p. 1147.
Results of Supravaginal Amputation and Castration in Tuberculosis. F. Siegert.—p. 1150.
Rare Injuries of Orbit; Two Cases. C. Holste.—p. 1151.
Megacolon. H. Zoepffel.—p. 1152.
Exophthalmic Goiter with Liver Atrophy. Raab and Terplan.—p. 1154.
*Catarrhal and Syphilitic Jaundice. E. Klopstock.—p. 1156.
Tracheotomy and Tuberculosis of Larynx. v. Tóvölgyi.—p. 1157.
Roentgen Treatment of Polycythemia. A. Mosenthal.—p. 1158.
Meinicke's Turbidity Reaction. G. Sato.—p. 1160.
Survey on Physiology and Pathology of Stomach. W. Wolff.—p. 1165.
Urological Survey. Paschkis.—p. 1166.
Experimental Radiologic Research. Holfelder.—p. 1168. Conc'n.

Toxemia of Pregnancy.—Sellheim points out that animals do not suffer from eclampsia. He believes that the reason for its occurrence in women lies in the fact that childbearing is a much greater strain than pregnancy in animals. The upright posture and the size of the brain of the fetus have contributed much to the difficulty of labor. The energy requirements for the development of a human fetus are much greater than for the same weight of an animal. Childbearing is such a strain that it borders on the pathologic. Overeating with proteins is one of the causes why eclampsia is more frequent in towns than in the country or among savages.

Spontaneous Changes in Leukocyte Count.—Glaser and Buschmann found in 55 per cent. of 333 patients spontaneous changes in the number of leukocytes (over 2,000 in 1 c.mm.). If they repeated the count on three different days, they found similar changes in 90 per cent. of their subjects. The changes are less frequently (in 25 per cent.) pronounced in the venous blood. These spontaneous fluctuations account for many findings of so-called digestive leukocytosis and hemoclastic crises.

Early Neurosyphilis.—Pette believes that the early syphilis of the central nervous system has become more frequent since the introduction of arsphenamin. All his patients, except three, had been treated with insufficient doses.

Catarrhal and Syphilitic Jaundice.—Klopstock finds that the speed of sedimentation of blood corpuscles is increased in syphilitic (and infectious) jaundice while it is decreased in simple catarrhal jaundice.

Monatsschrift für Kinderheilkunde, Leipzig

26: 433-544 (Aug.) 1923

Analysis of Buttermilk and Other Sour Milk. C. Meyer.—p. 433.
*Treatment of Dyspepsia. A. Adam.—p. 439.

Treatment of Dyspepsia.—Adam declares that the main aim in treatment of dyspepsia should be the suppression of colon bacilli. He reports good results with the use of milk poor in fat and rich in calcium.

Wiener klinische Wochenschrift, Vienna

36: 603-618 (Aug. 23) 1923

*Action of Iodin on the Thyroid. B. Breitner.—p. 603.
Acute Leukemia and Leukosarcomatosis. D. Scherf.—p. 605.
*Acetonuria in Pregnancy. Pritzi and Lichtmann.—p. 609.
*Tuberculosis of Skin as Systemic Disease. F. Fischl.—p. 611.

Action of Iodin on Thyroid.—Breitner believes that iodin activates the stored colloid in the goiters. In parenchymatous goiters it causes at first an inhibition of the output. The differences in the action of iodin in exophthalmic goiter may be due to a different etiology of the goiter.

Acetonuria in Pregnancy.—Porges and Novak found that acetone appears in the urine of pregnant women in a few hours after starting a diet free from carbohydrates. Pritzi and Lichtmann examined fifty-seven women and had only 10 per cent. of nonconcordant results.

Tuberculosis of Skin as Systemic Disease.—Fischl confirms Löwenstein's theory: The skin acquires a predisposition to tuberculosis, if the first infection occurred in it. Tuberculosis of the skin is rarely associated with a progressive tuberculous affection of other organs.

36: 619-634 (Aug. 30) 1923

*Tangential Percussion. L. Karczag.—p. 619.
Tuberculosis in Infants. K. Barchetti.—p. 622.
Action of Human Serum in Diabetics. R. Latzel.—p. 625.
Treatment of Anxious Conditions with Drugs. L. Stein.—p. 827.
Training of Physicians in the Care of Children. Gottlieb.—p. 628.

Tangential Percussion.—Karczag puts a finger or an ivory rod vertically on the body and taps it parallel to the surface of the skin. The percussion has to be light. The method has given him good results in the sternal region.

Zeitschrift für Kinderheilkunde, Berlin

36: 1-62 (Aug. 22) 1923

Coccygeal Teratoma in the New-Born; Two Cases. L. Heidenhain and G. B. Gruber.—p. 1.
*Anthropometric Examinations of Adolescents. E. Nobel.—p. 13.
Goiter in Children in Austria. E. Nobel and A. Rosenblüth.—p. 17.
Scurvy and Infection. R. Stern.—p. 32.
Diuresis Test in Infants. W. Lasch.—p. 42.
*Prognosis of Osteogenesis Imperfecta. L. Stecher.—p. 58.

Anthropometric Examinations of Adolescents.—Nobel measured 6,467 adolescents in Vienna in a manner similar to that employed in 1920 by the American relief commission. The figures indicate improved conditions, which he attributes partly to the American relief action.

Prognosis of Osteogenesis Imperfecta.—Stecher shows by three cases that the prognosis with idiopathic osteopsathyrosis is not absolutely bad as to strengthening of the bones.

Zentralblatt für Chirurgie, Leipzig

50: 1313-1344 (Aug. 25) 1923

Pylorectomy in Gastric Ulcer. M. Madlener.—p. 1313.
Nasopharyngeal Fibromas. Birkholz.—p. 1318. Comment. Coenen.—p. 1322.
Vaccine Therapy in Echinococcus Disease in Lung. Petrow.—p. 1322.
Nitroglycerin in Surgery. F. Franke.—p. 1325.
*Sedimentation of Erythrocytes in Surgery. E. Rothe.—p. 1328.

Diagnostic Value of Sedimentation of Red Corpuscles in Surgery.—Rothe points out that accelerated sedimentation of erythrocytes is usually present in oligocythemia and all processes in which the resorption of waste products is increased (all inflammatory processes, fractures, sterile wounds, pregnancy and malignant tumors). In surgery the reaction is important in the field of bone pathology. The method is of great value also for the diagnosis and prognosis of pulmonary tuberculosis. Normal sedimentation will usu-

ally exclude active tuberculosis. It remains to be seen whether it will be possible to make sedimentation findings, like the Wassermann test, relatively specific.

Zentralblatt für Gynäkologie, Leipzig

47: 1361-1392 (Aug. 25) 1923

*Serodiagnosis of Syphilis in Pregnancy. L. Handorn.—p. 1361.
A Rare Dermoid Formation of the Ovary. L. Schoenholz.—p. 1363.
Treatment of Puerperal Sepsis. Conrad.—p. 1374.
Eventration or Relaxatio Diaphragmatica in New-Born. A. Hillejan.—p. 1383.

Serodiagnosis of Syphilis in Pregnancy.—Opitz, Stühmer and Dreier, Esch and Wieloch report that they have often seen positive Wassermann reactions in healthy pregnant women and in puerperants. Handorn had each of seventy-two blood specimens from fifty-one healthy women (pregnant, parturients and puerperants) examined in three different laboratories. In two of the laboratories all the blood specimens gave in every instance completely negative reactions; in one laboratory one specimen gave a weakly positive reaction, and in five instances there was a doubtfully positive reaction. Handorn recommends in doubtful reactions that the clinician endeavor to have blood specimens examined in several different laboratories, unless he is sure that the laboratory that does his work has reached the point of accuracy where nonspecific reactions do not occur.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

2: 557-660 (Aug. 11) 1923

*Blocking the Splanchnic Nerve. Hustinx.—p. 558.
Leukocyte Count Directly After Blood Transfusion. H. L. M. van der Hoff.—p. 571.
*Occupational Eye Disturbances. C. Bakker.—p. 576.
Relative Slowing of Pulse in Sepsis. H. B. Goettsch.—p. 585.
*Bacteriophagy. N. van der Walle.—p. 589.
*The Exudative Diathesis. C. de Lange and A. Lommen.—p. 624.

Blocking the Splanchnic Nerve.—Hustinx adds 119 cases to those on record which brings to 1,375 the number of operations done under anesthesia of the splanchnic nerves in the last two or three years. Four deaths have been recorded. The Braun technic is more certain, but the Kappis technic anesthetizes all viscera above the pelvis. A combination of the two seems to be preferable. Complications on the part of the respiratory organs are reduced to the minimum, but are not entirely done away with. The needle must be fully 14 cm. long, and it is a great improvement to introduce it in a sheath, pushing the tip beyond the sheath only at the deepest point.

Occupational Ocular Disturbances in Manufacture of Artificial Silk.—Bakker's experiments apparently exculpated sulphureted hydrogen as responsible for the superficial keratitis he describes. The smarting, photophobia and pain usually had subsided by the next day, but recurrences were frequent. He is inclined to incriminate the arsenic when ventilation is defective. Only the workers at the spinning machines were affected, and sometimes several were affected at once. The smoke and odor from frankincense strewed on live coals proved an effectual means for studying the air currents in the factory.

Bacteriophagy.—Van der Walle reviews the extensive literature on bacteriophagy which is still, he says, almost as much of a mystery as ever. The bacteriophage seems to be ubiquitous; it has been found in urine, in effusions, blood, Seine and sea water, and in soil. It stands heating to 58 C. for an hour, and contact with phenol in less than 10 per cent. solutions. It does not seem to be affected by emetin, caffein, strychnin or morphin. The results are conflicting in regard to its use in clinical therapeutics. Typhoid bacilli carriers have not been freed of their bacilli even by injection of large amounts of the bacteriophage. The by-effects from injection of the bacteriophage are slight and transient, and we must remember d'Herelle's experience that the toxicity progressively declines; the amount that might kill a rabbit in one day is borne without disturbance a month later.

Emetin in the Exudative Diathesis.—De Lange remarks that pediatricians have been using emetin in the exudative diathesis for some years. It sometimes proves useful. Lommen has found that it may occasionally render good service in rebellious scrofula in children. When it fails, he injects blood from a close relative. He has never witnessed untoward effects.

2: 661-772 (Aug. 18) 1923

*Miliary Tuberculosis. G. O. E. Lignac.—p. 662.
Differences and Resemblances Between Tuberose Sclerosis and Neurofibromatosis. F. S. van Bouwdijk Bastiaanse.—p. 673.
*Medical Practice and Research. Sir Humphrey Rolleston.—p. 677.
Adult Hip Joint with Congenital Dislocation. H. Timmer.—p. 689.

Miliary Tuberculosis.—In the case described by Lignac, the hematogenous chronic miliary tuberculosis was overshadowed by the chronic meningitic symptoms. The diagnosis of the miliary disease was made first from the tubercle in the choroid, and Hartwich has reported recently that general miliary tuberculosis was found in 50 per cent. of all his cases of tubercle in the choroid. In 198 cases of miliary tuberculosis the microscope revealed a tubercle in the choroid in all but 3.

Clinical and Other Methods of Medical Practice and Research.—Rolleston remarks that the difference between the laboratory worker and the practising physician is that the former devotes himself to the complete solution of one problem while the latter attempts to solve a large number of perhaps more difficult problems in the course of the day's work, and often has to be content with but partial explanations. He says that the present era of study of disorders of function "threatens the passing of morbid anatomy. This has certainly occurred in America where basal metabolism is much in favor; for example, in the thirty-eight hospitals of Chicago, 1921, the percentage of necropsies in fatal cases was 15, and only 2.5 per cent. in 852 deaths in ten general hospitals." He concludes his sketch with the statement that as so much depends on the personnel and ideals of those responsible in group medicine, the "diagnostic clinics" do not all appear to have given satisfaction. "There is still a risk that specialization may be undertaken too early in a medical man's career."

2: 861-956 (Sept. 1) 1923

Ring-Shaped Crystalline Lens. M. W. Woerdeman.—p. 862.
*Microtest for Glucose in Body Fluids. B. K. Boom and M. M. G. Woensdregt.—p. 867.
Comparative Sensory and Motor Tests. J. Lubsen.—p. 873.
Associated Malaria and Typhoid. A. van Dongen.—p. 883.
Insulin in Case of Diabetes. G. Berg.—p. 884.
The Old Hospitals of Amsterdam. G. Hellinga.—p. 886.
Practice of Medicine in 1817. A. J. van der Weyde.—p. 902.

Microtest for Glucose in Body Fluids.—Boom and Woensdregt endorse the micromethod they describe which they have found simple, rapid and reliable. The blood is freed from albumin and then reduced with cupric sulphate and compared with a 0.02 per cent. solution of glucose, after treating with the Folin-Wu reagent. They regard the blood sugar range in health, fasting, as 0.1 per cent., from 0.081 to 0.127 per cent.; after a test meal, 0.13 per cent., never more than 0.15 per cent. There was no glycosuria with less than 0.165, while it was always manifest with more than 0.17 per cent. except with chronic nephritis. The average glucose content of the normal cerebrospinal fluid is 0.07, ranging from 0.66 to 0.08 per cent. The technic is a modification of Ponder and Howie's; requires only 0.2 c.c. of blood, and can be applied to a number of patients at a time. The findings in 21 diabetics and 22 nondiabetics are tabulated.

Acta Medica Scandinavica, Stockholm

58: 313-514 (Sept. 6) 1923

*Lumen of Bronchioli with Varying Air Pressure. C. Sonne.—p. 313.
*Nitrogen Retention and Increased Blood Pressure. E. Kylin.—p. 342.
*Polyarthritis and Salicylate Treatment. Ehrström and Wahlberg.—p. 350.
*Normal Thoraco-Abdominal Reflexes. A. Barkman.—p. 364.
*Threshold of Glycosuria. K. Faber and K. M. Hansen.—p. 372.
The Nervous System in Exophthalmic Goiter. J. Holst.—p. 396.
Size of Lungs in Health. C. Lundsgaard and K. Schierbeck.—p. 470.
Chest Measure and Size of Lungs. Idem.—p. 486.
*Size of Lungs with Mitral Defect. Idem.—p. 495.

Lumen of Bronchioli in Different Air Pressures.—Sonne's tracings show that the bronchioli dilate according to the difference of the pressure within and without the lung. The inspiratory position in an attack of bronchial asthma serves to overcome the contraction of the bronchioli.

Nitrogen Retention and Increased Blood Pressure.—Kylin considers increased blood pressure and nitrogen retention as two entirely independent symptoms. The usually high con-

centration of uric acid in the blood in patients with hypertension is a phenomenon parallel to hyperglycemia, and is due to a disturbance of the purin metabolism, not to retention.

Polyarthritis, Heart Disease and Salicylate Treatment.—This article was reviewed May 19, 1923, p. 1496, when published in the local (Helsingfors) journal.

Normal Thoraco-Abdominal Reflexes.—Barkman found that irritation of the fourth to eighth intercostal spaces produces contractions of the first three segments of the abdominal rectus muscle. In many instances isolated contraction of the different segments could be provoked. In healthy subjects the reflexes are never unilateral.

Threshold of Glycosuria and the Errors Involved.—Faber and Hansen demonstrate that the level of blood sugar at which glycosuria appears is fairly constant in the same individual. The carbohydrates allowed should be fractioned in three equal parts daily, as the patient is thus able to tolerate more of them than if they were given in one portion.

Size of Lungs with Mitral Defect.—Lundsgaard and Schierbeck examined the lung capacity in twelve patients with lesions of the mitral valve. They found that the first change is an increase in the residual air. Then the total capacity starts to decrease and later the residual air decreases also.

Hospitalstidende, Copenhagen

66: 573-588 (Aug. 15) 1923

*Gonococcus Sepsis. E. W. Gøthgen.—p. 573.

Gonococcus Sepsis.—Gøthgen urges prompt bacteriologic examination of the blood in every case of sepsis. In the case described in a man, aged 50, the lymphangitis of the arm, fever, slight jaundice and polyneuritis proved to be a manifestation of gonococcus sepsis. The knee and elbow suppurated by the third week and gonococci were found in the pus. There was a history of gonorrheal urethritis twenty-seven years before, but the genital organs seemed normal during the sepsis except that the prostate was slightly enlarged, and gonococci were found in the secretion after massage. Under passive hyperemia and antigonococcus vaccine the symptoms rapidly subsided. The prognosis in gonococcus sepsis depends mainly on whether the heart is involved or not. Antimeningococcus serum has often proved promptly effective in treatment of gonococcus sepsis. Citron published in 1921 a case with prompt recovery under two injections of 50 c.c. of meningococcus antiserum. Heresen, Barbe and others have reported prompt recovery from gonococcal adnexitis, rheumatism and polyarthritis under antimeningococcus serum. Gøthgen is inclined to accept a long latent gonococcal prostatitis in his case, roused by a recent unusual abuse of alcohol, entailing congestion in the pelvic organs and sweeping away some small thrombus.

66: 589-604 (Aug. 22) 1923

*Adenoid Vegetations. Monrad.—p. 589.

Adenoid Vegetations and the Exudative, Lymphatic Diathesis.—Monrad states that in 150 children with adenoid vegetations in his charge, 1921-1922, all but 16 presented signs of the exudative-lymphatic diathesis. He insists that treatment should be directed to the latter and no attempt should be made to remove the adenoids unless emergency demands, or there is no tendency to the exudative diathesis. In all other cases he advises to wait patiently for a year or two to allow the adenoids to subside spontaneously under dietetic treatment of the diathesis. In 100 of his cases the removal of the adenoids had given only transient relief, if any, the growths promptly recurring. Satisfactory results were realized from tonsillotomy only in 7 of 23 cases.

Ugeskrift for Læger, Copenhagen

85: 541-564 (Aug. 2) 1923

*Otogenous Meningitis. H. Mygind.—p. 541.
Recent Studies of Measles. O. M. Henriques.—p. 545.
*Venereal Disease in Denmark. S. Lomholt.—p. 555.
The Pharmacy Question. Winslow.—p. 560.

Otogenous Meningitis.—Mygind relates that among 150 meningitis cadavers he found 4 in which nothing was discovered to explain the symptoms of otogenous meningitis during life. The meningitis had evidently completely subsided although the secondary changes had proved fatal. In 27 per cent. of 67 fatal cases the lumbar puncture fluid was sterile although bacteria were found postmortem. Polymorphonucleosis was pronounced in all but one case. He always performs craniotomy, especially in the middle cranial fossa. If the dura shows no signs of a deep process, he stops here. Repeated lumbar puncture not only allows oversight of the course of the meningitis but relieves the pressure, and is directly curative. He has also found an antistreptococcus serum useful. Recovery is the rule in otogenous meningitis when the primary focus is not too close and pleocytosis is slight or moderate. After removal of the primary focus, the meningitis subsides. But there is no arresting the meningitis when it develops like the explosion of a powder barrel.

The Control of Venereal Disease in Denmark.—This article was prepared for the Pasteur Centennial Hygiene Exhibition and was reviewed in THE JOURNAL, Nov. 3, 1923, p. 1553.

85: 565-580 (Aug. 9) 1923

*Experimental Hermaphroditism. K. Sand.—p. 565.
Case of Gallbladder Ileus. H. Friderichsen.—p. 574.

Experimental Hermaphroditism.—Sand has been conducting research in this line for years. He here describes the results in three series of guinea-pigs, about 1 month, 3 months or 12 months old, in which gonads of the opposite sex had been transplanted. Ovaries transplanted into the testes showed that the sexual characteristics were still transversible, hormone-susceptible, even when puberty was well advanced, as well as in the younger animals. But the experiments always failed in the adult animal. The mammae in the male can enlarge and secrete milk merely under the influence of an ovary implanted in the testes. The bisexual characters at first gradually changed so that one or the other sex finally predominated. This field of experimental hermaphroditism has demonstrated that even the microscope is too coarse an instrument to explain all the facts observed.

85: 581-596 (Aug. 16) 1923

Distribution of Diphtheria Bacilli. M. Christiansen.—p. 581.
*Gonococcal Bursitis. E. Petersen.—p. 586.
*Prophylaxis of Ophthalmia Neonatorum. G. Norrie.—p. 587.

Gonococcal Bursitis.—The bursa in front of the left patella of the young woman suppurated, and gonococci were cultivated from the pus and also from the urethra. Rapid recovery followed incision of the bursa and local treatment of urethra and vagina.

Ophthalmia Neonatorum.—Norrie states that in 1900 the Credé silver nitrate instillation was made compulsory in Denmark. In the twenty years before this, in 13.7 per cent. of the 365 blind inmates of the blind asylum ophthalmia neonatorum was incriminated; in the twenty years since then, only in 8.8 per cent. of the 372 inmates. Since 1905, there have been only 8 cases in all. It is possible that gonococcus infection after delivery may have been responsible for the infection in some of these cases.

85: 597-614 (Aug. 23) 1923

*Medical Examination of Intoxicated Motorists. J. Fog.—p. 597.
Internal Treatment of Glaucoma. S. Sander-Larsen.—p. 603.
Postgraduate Training for Practitioners. S. Alsted.—p. 607. Conc'n, p. 663.

85: 615-628 (Aug. 30) 1923

Diagnosis by Pain Zones. T. B. Wernøe.—p. 615.
Functional Dyspepsia. I. Freuchen.—p. 616.

85: 629-652 (Sept. 6) 1923

Rickets and Tetany. C. Friderichsen.—p. 629.
Tuberculin Treatment of Renal Tuberculosis. C. A. Blume.—p. 630.

Medical Examination of Intoxicated Motorists.—The Danish automobile law of 1921 imposes a penalty for driving while intoxicated, but the courts found that opinions differed as to the degree of culpable intoxication. Fog summarizes his experiences in 50 cases of the kind, listing the aspect; the behavior; orientation in regard to time and place; memory; speech; gait; handwriting (name, age, residence, occupation); pulse; pupils (size and reaction to light); reduced perception of pain; odor of alcohol, and signs of disease (epilepsy, apoplexy). The pulse was accelerated in all the men, even in the 9 who were sober, and he warns that a clumsy gait may be natural in some persons. The pupils were abnormal in 13 and in one sober man, and the odor of alcohol was strong in 6 men who were quite sober.